



Department for
Business, Energy
& Industrial Strategy



ENERGY TRENDS

JUNE 2017



June 2017

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Any enquiries regarding this publication should be sent to us at energy.stats@beis.gov.uk.

This publication is available for download at www.gov.uk/government/statistics/energy-trends-june-2017.

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Introduction

Energy Trends and Energy Prices are produced by the Department for Business, Energy and Industrial Strategy (BEIS) on a quarterly basis. Both periodicals are published concurrently in June, September, December and March. The June editions cover the first quarter of the current year.

Energy Trends includes information on energy as a whole and by individual fuels. The text and charts provide an analysis of the data in the tables. The tables are mainly in commodity balance format, as used in the annual Digest of UK Energy Statistics. The 2016 edition of the Digest was published on 28 July 2016 and is available on the BEIS section of the GOV.UK website at: www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes

The balance format shows the flow of a commodity from its sources of supply, through to its final use. The articles provide in-depth information on current issues within the energy sector.

The text and tables included in this publication represent a snapshot of the information available at the time of publication. However, the data collection systems operated by BEIS, which produce this information, are in constant operation. New data are continually received and revisions to historic data made. To ensure that those who use the statistics have access to the most up-to-date information, revised data will be made available as soon as possible, via the electronic versions of these tables. The electronic versions are available free of charge from the BEIS section of the GOV.UK website. In addition to quarterly tables, the main monthly tables that were published in the period up to May 2001 when Energy Trends was produced monthly, continue to be updated and are also available on the BEIS section of the GOV.UK website. Both sets of tables can be accessed at:

www.gov.uk/government/organisations/department-for-business-energy-and-industrial-strategy/about/statistics

Annual data for 2016 included within this edition is on a provisional basis. New data are continually received and revisions to previous data made. Finalised figures for 2016 will be published on the 27 July 2017 in the annual Digest of UK Energy Statistics.

Energy Trends does not contain information on Foreign Trade, Weather (temperature, wind speed, sun hours and rainfall) and Prices. Foreign Trade and Weather tables are available on the BEIS section of the GOV.UK website at:

www.gov.uk/government/organisations/department-for-business-energy-and-industrial-strategy/about/statistics.

Information on Prices can be found in the Energy Prices publication and on the BEIS section of the GOV.UK website at: www.gov.uk/government/collections/quarterly-energy-prices

Please note that the hyperlinks to tables within this document will open the most recently published version of a table. If you require a previously published version of any table please contact Kevin Harris (see details below).

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The main points for the first quarter of 2017:

- Total energy production was 0.1 per cent lower than in the first quarter of 2016.
- Oil production fell by 4.6 per cent when compared with the first quarter of 2016, driven largely by a decrease in production at fields feeding into the Sullom Voe terminal.
- Natural gas production was 4.7 per cent higher than in the first quarter of 2016, following the start-up of the Cygnus gas field in December 2016.
- Coal production in the first quarter of 2017 was 11.7 per cent lower than the first quarter of 2016, due to falling demand. Coal imports were 9.1 per cent lower as generators' demand for coal fell by 32 per cent.
- Total primary energy consumption for energy fell by 2.8 per cent. However, when adjusted to take account of weather differences between the first quarter of 2016 and the first quarter of 2017, total primary energy consumption fell by 0.7 per cent.
- Temperatures in the quarter were on average 0.7 degrees warmer than a year earlier, with average temperatures in both February and March being warmer than a year earlier.
- Final energy consumption (excluding non-energy use) was 2.2 per cent lower than in the first quarter of 2016. Domestic consumption fell by 5.1 per cent due to warmer weather. On a seasonally and temperature adjusted basis final energy consumption fell by 0.1 per cent, within which domestic consumption fell 0.5 per cent.
- Gas demand was 0.7 per cent lower than the first quarter of 2016, whilst electricity consumption was 2.3 per cent lower, both driven by the warmer weather in the first quarter of 2017.
- Electricity generated in the first quarter of 2017 increased 1.0 per cent compared to 2016 Q1, by 0.9 TWh to 93.2 TWh, however net imports fell 3.1 TWh over the same period, leading to a 2.2 per cent fall in electricity supplied.
- Coal's share of generation decreased from 15.9 per cent to 11.3 per cent, whilst gas's share rose from 37.0 per cent to 39.9 per cent. Nuclear's share of generation increased slightly from 18.8 per cent in the first quarter of 2016 to 18.9 per cent in the first quarter of 2017.
- Low carbon electricity's share of generation increased from 44.4 per cent in the first quarter of 2016 to 45.6 per cent in the first quarter of 2017.
- Renewables' share of electricity generation increased to 26.6 per cent, compared to the 25.6 per cent share in the first quarter of 2016, mostly due to increased wind and solar capacity.
- Renewable electricity generation was a record 24.8 TWh in the first quarter of 2017, an increase of 5.1 per cent on the same period a year earlier.

Section 1 - Total Energy

Key results show:

Total energy production was 0.1 per cent lower than in the first quarter of 2016 with increased gas output offsetting a fall in oil production. (**Charts 1.1 & 1.2**)

Total primary energy consumption for energy uses fell by 2.8 per cent. However, when adjusted to take account of weather differences between the first quarter of 2016 and the first quarter of 2017, primary energy consumption fell by 0.7 per cent. (**Chart 1.3**)

Final consumption fell by 2.1 per cent compared to the first quarter of 2016. Domestic consumption fell by 5.1 per cent reflecting the warmer weather in the quarter, other final users' consumption fell by 2.3 per cent, industrial consumption fell by 0.5 per cent, whilst transport consumption rose by 0.5 per cent. (**Chart 1.4**)

Net import dependency was 37.4 per cent, up 3.3 percentage points from the first quarter of 2016. (**Chart 1.6**)

Fossil fuel dependency was 82.1 per cent in the first quarter of 2017. (**Chart 1.7**)

Relevant tables

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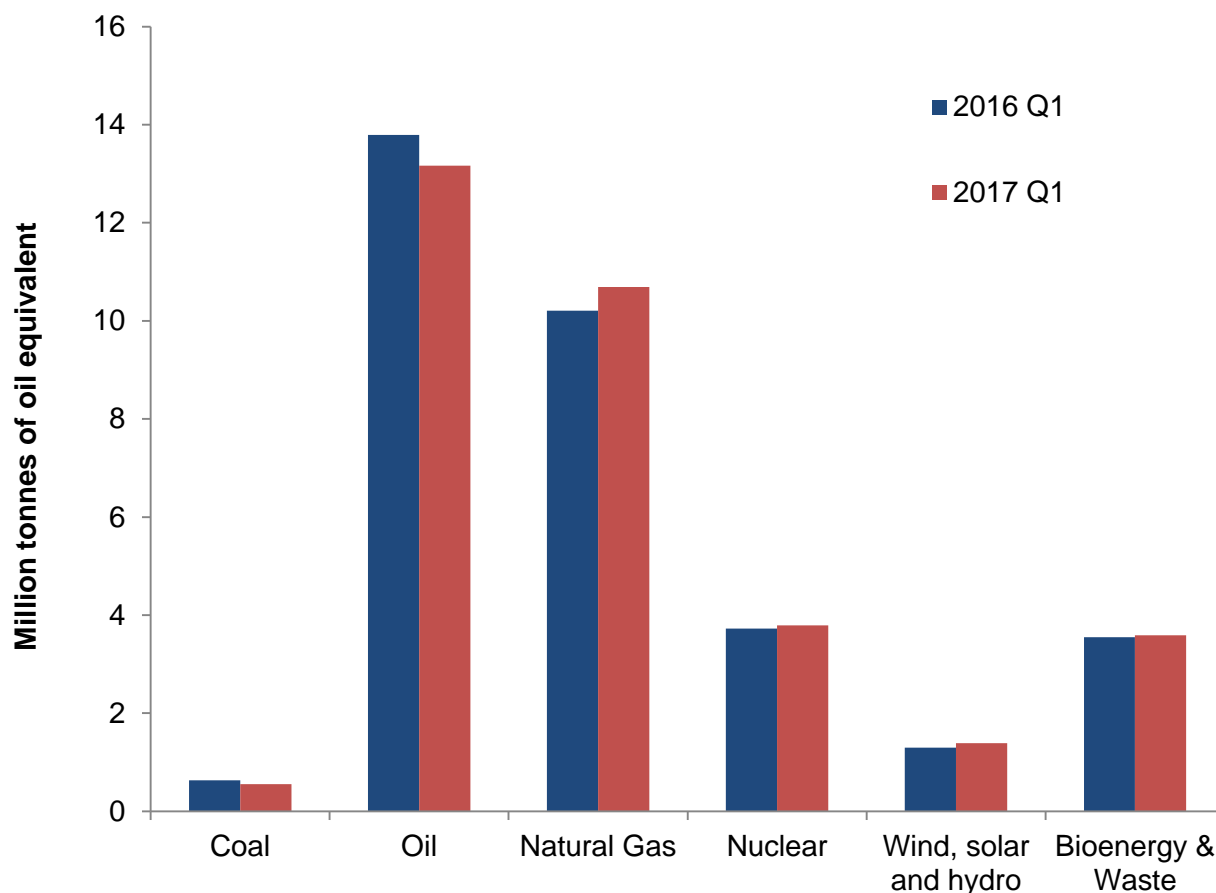
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Chart 1.1 Production of indigenous primary fuels ([Table 1.1](#))

Total production in the first quarter of 2017 stood at 33.2 million tonnes of oil equivalent, 0.1 per cent lower than in the first quarter of 2016.

Production of oil fell by 4.5 per cent compared to the first quarter of 2016, due to a decrease in production at fields feeding into the Sullom Voe terminal, while production of natural gas rose by 4.7 per cent, following the start-up of the Cygnus gas field in December 2016.

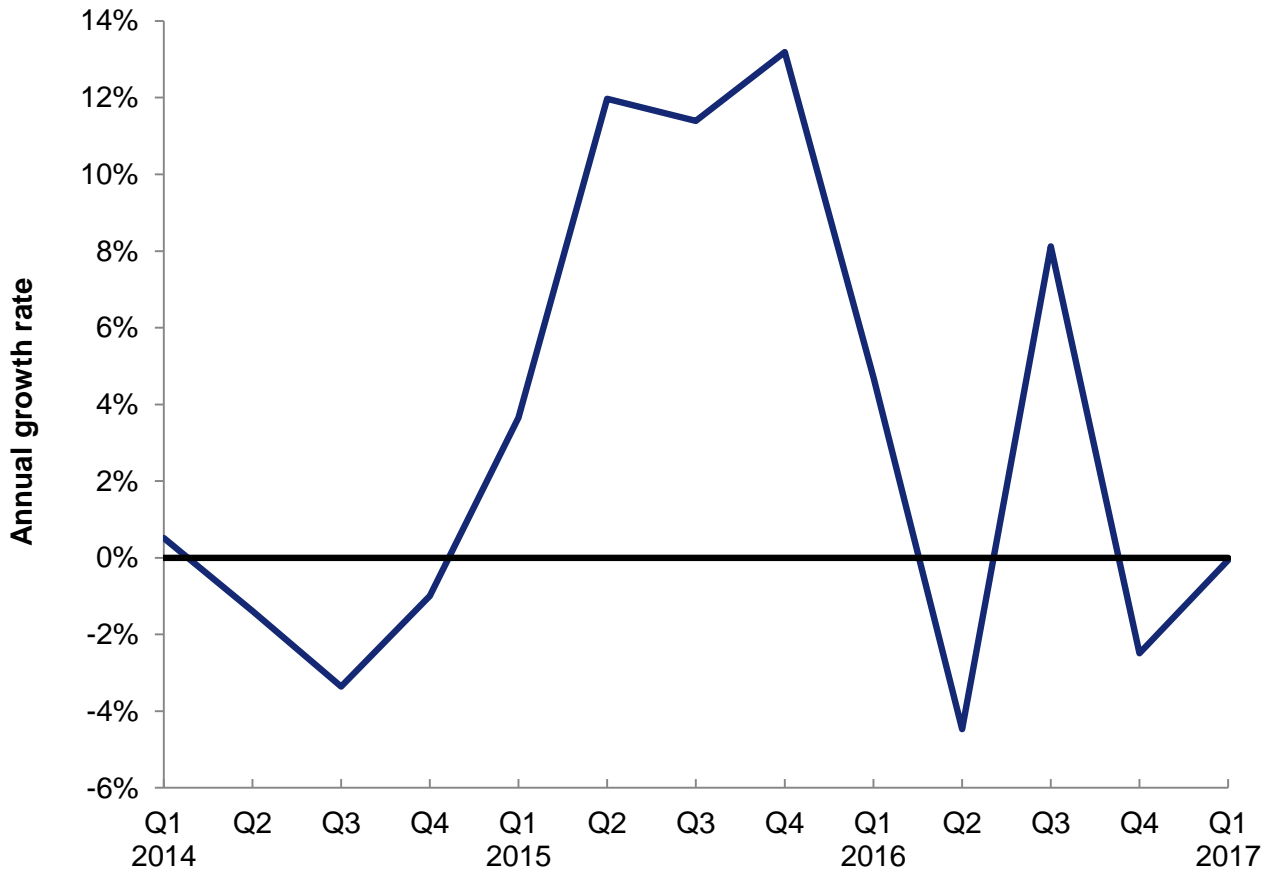
Primary electricity output in the first quarter of 2017 was 3.1 per cent higher than in the first quarter of 2016, within which nuclear electricity output was 1.8 per cent higher and output from wind, solar and natural flow hydro was 7.1 per cent higher, boosted by increased wind and solar capacity.

Production of bioenergy and waste was 1.1 per cent higher compared to the first quarter in 2016.

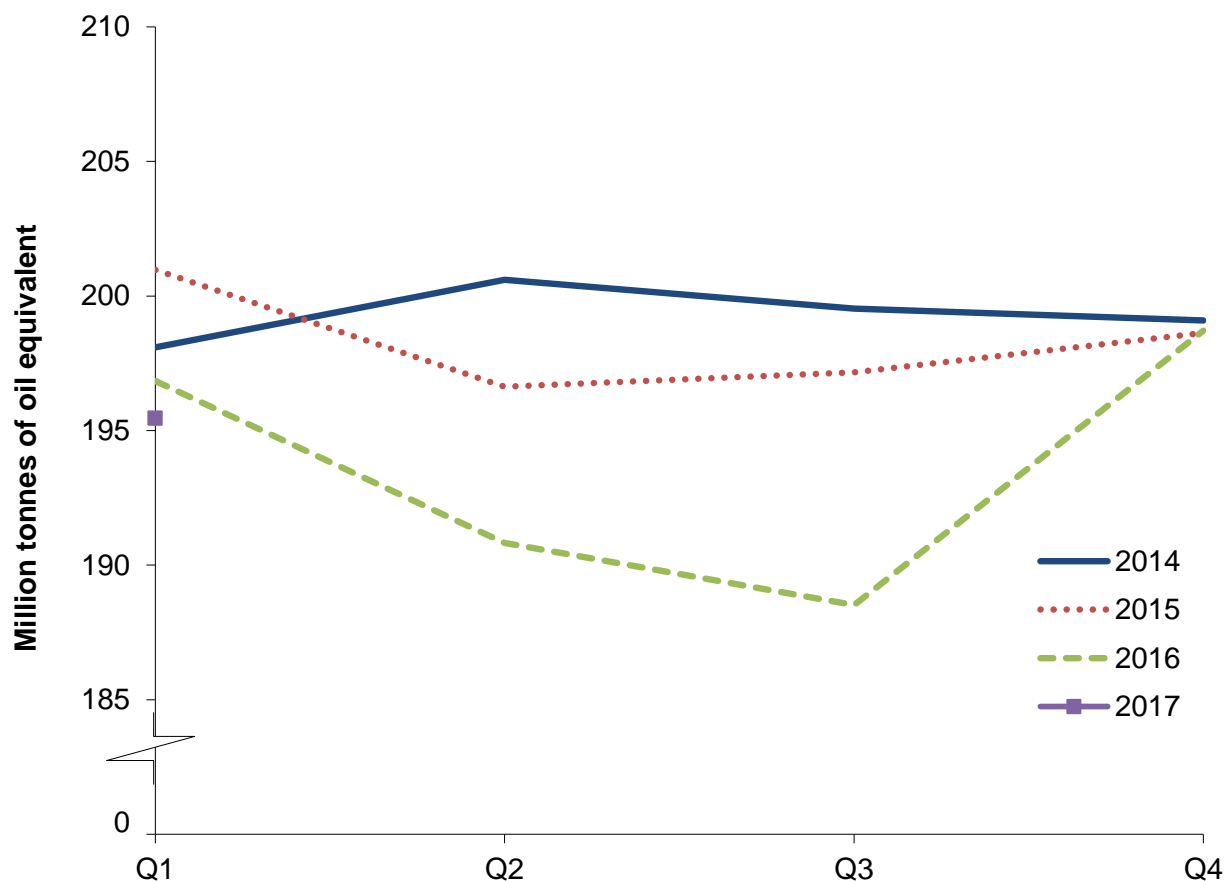
Coal production fell by 11.7 per cent compared to the first quarter in 2016 due to falling demand, particularly for electricity generation.

Total Energy

Chart 1.2 UK production (annual growth rate) ([Table 1.1](#))



In the first quarter of 2017, the annual growth rate of UK production was -0.1 per cent, down 4.8 percentage points compared to the first quarter of 2016, but up 2.4 percentage points on the fourth quarter of 2016, with increases in gas, bioenergy and primary electricity output offset by decreases in oil and coal output.

Chart 1.3 Total inland consumption (primary fuel input basis) ⁽¹⁾ [\(Table 1.2\)](#)

Total inland consumption on a primary fuel input basis (temperature corrected, seasonally adjusted annualised rate), was 195.5 million tonnes of oil equivalent in the first quarter of 2017, 0.7 per cent lower than in the first quarter of 2016. On an unadjusted basis inland consumption was 2.8 per cent lower, with the average temperature in the first quarter of 2017 being 6.4 degrees Celsius, 0.7 degrees Celsius higher than the same period a year earlier.

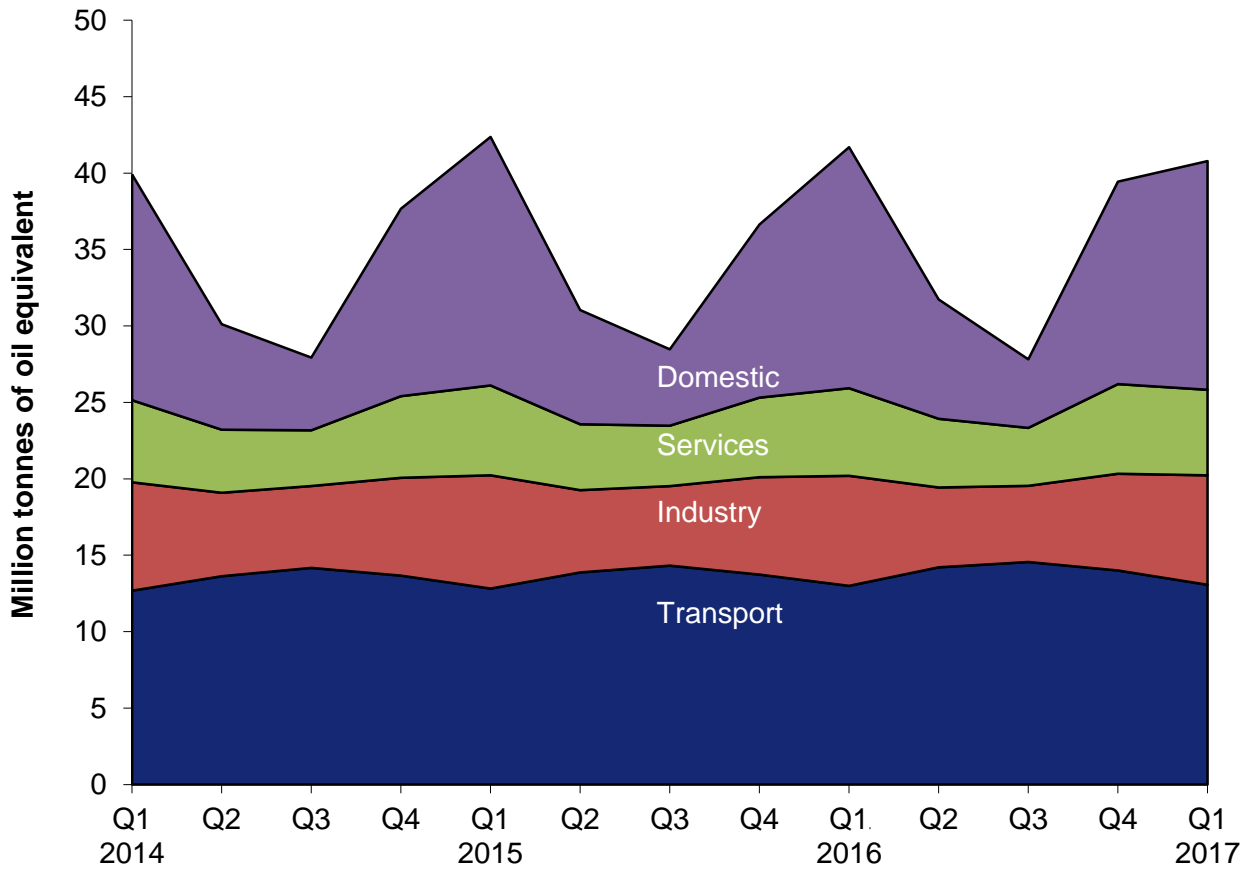
Between the first quarter of 2016 and the first quarter of 2017 (on a seasonally adjusted and temperature corrected basis) coal and other solid fuel consumption fell by 23 per cent as demand fell from electricity generators.

Also on a seasonally adjusted and temperature corrected basis, between the first quarter of 2016 and the first quarter of 2017, oil consumption fell by 0.5 per cent, whilst natural gas consumption rose by 3.5 per cent with increased demand from electricity generators.

On the same basis, bioenergy consumption rose by 1.4 per cent between the first quarter of 2016 and the first quarter of 2017, whilst primary electricity consumption fell by 1.8 per cent. The fall in primary electricity was due to a reduction in electricity imports from France which were down by 68 per cent due to damage to the interconnector.

Total Energy

Chart 1.4 Final energy consumption by user (Table 1.3a)



Total final consumption fell by 2.1 per cent between the first quarter of 2016 and the first quarter of 2017.

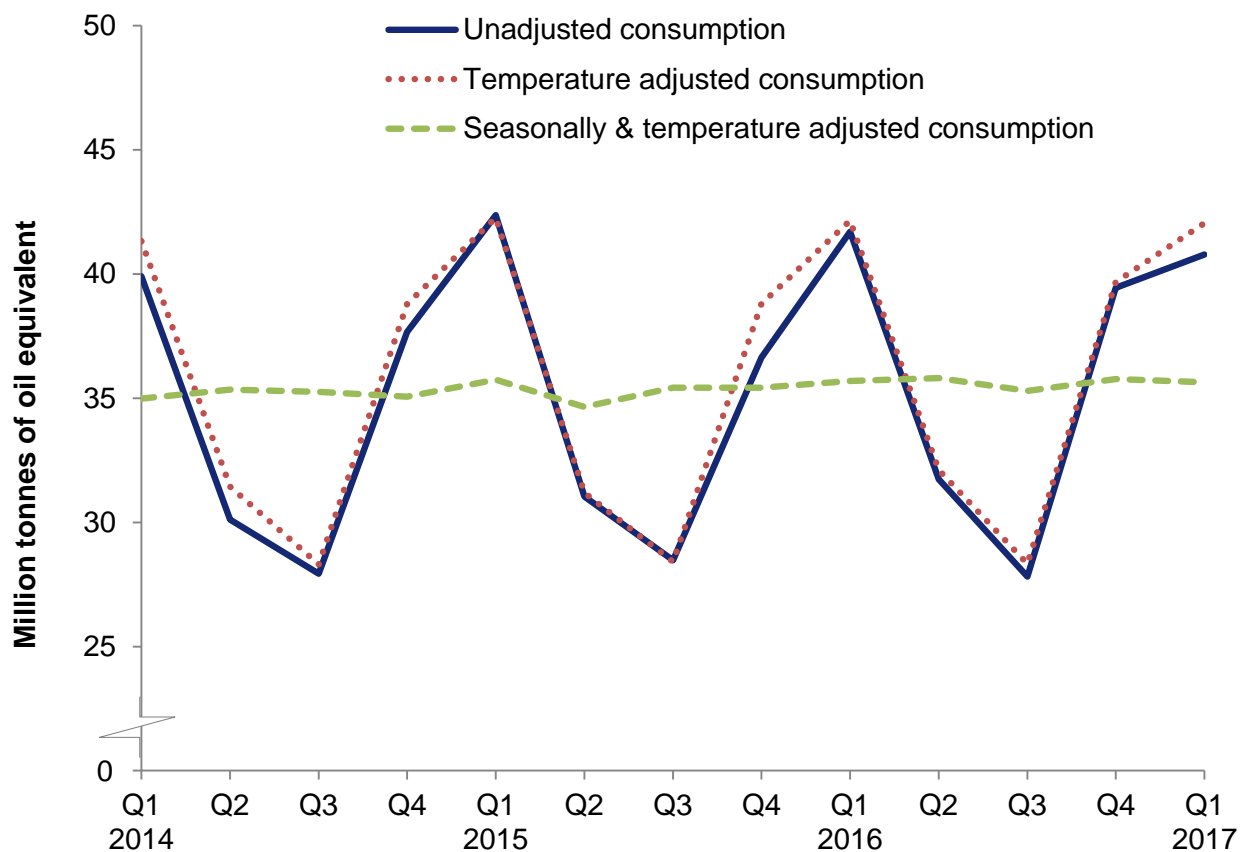
Domestic sector energy consumption fell by 5.1 per cent, reflecting the warmer weather compared to a year earlier.

Service sector energy consumption fell by 2.3 per cent.

Industrial sector energy consumption fell by 0.5 per cent.

Transport sector energy consumption rose by 0.5 per cent.

Chart 1.5 Seasonally adjusted and temperature corrected final energy consumption (Table 1.3c)



Total unadjusted final energy consumption (excluding non-energy use) fell by 2.2 per cent between the first quarter of 2016 and the first quarter of 2017.

On a seasonally and temperature adjusted basis final energy consumption (excluding non-energy use) fell by 0.1 per cent between the first quarter of 2016 and the first quarter of 2017.

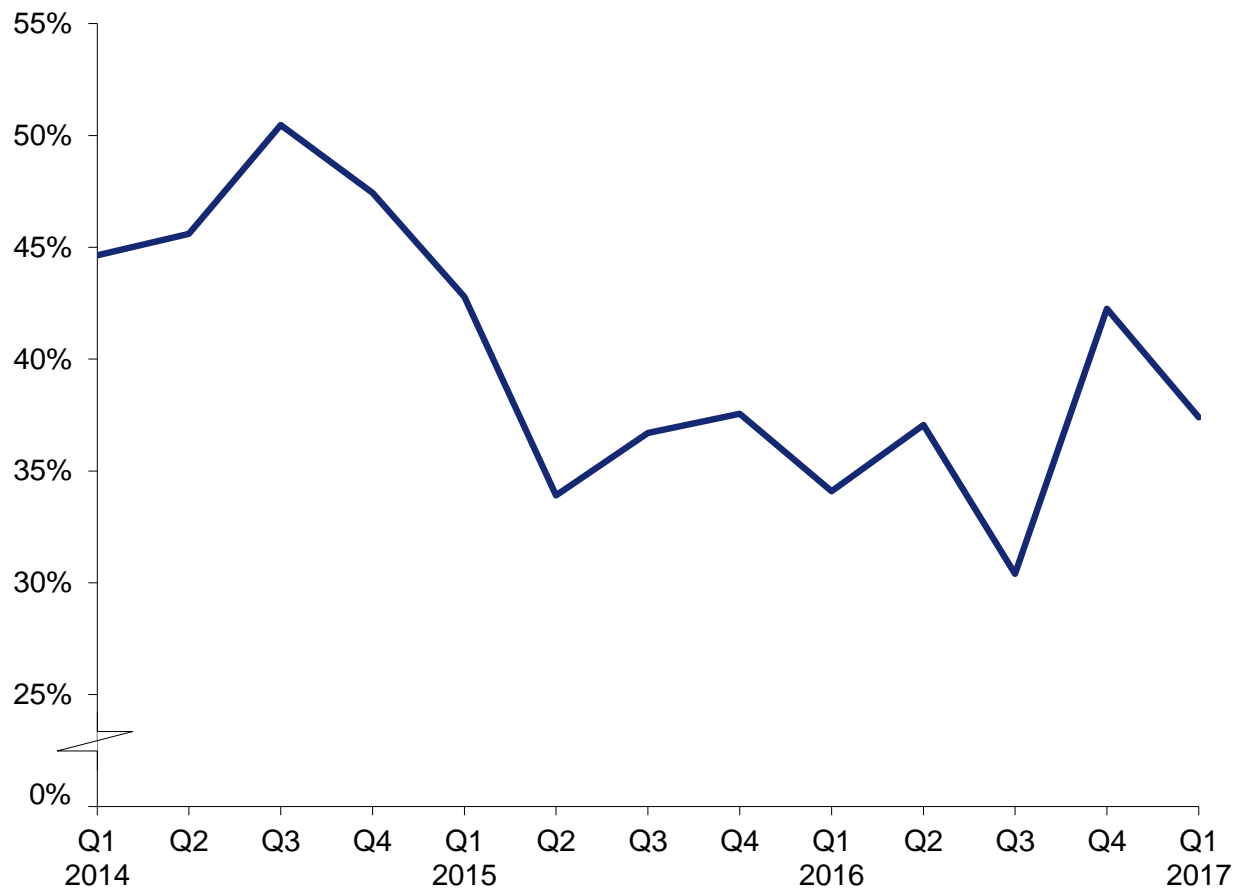
Unadjusted domestic consumption fell by 5.1 per cent over the same period, and was down 0.5 per cent on a temperature and seasonally adjusted basis.

Consumption data by fuel and sector is available in table ET 1.3c is now included within this publication as well as on the BEIS section of the GOV.UK website at:

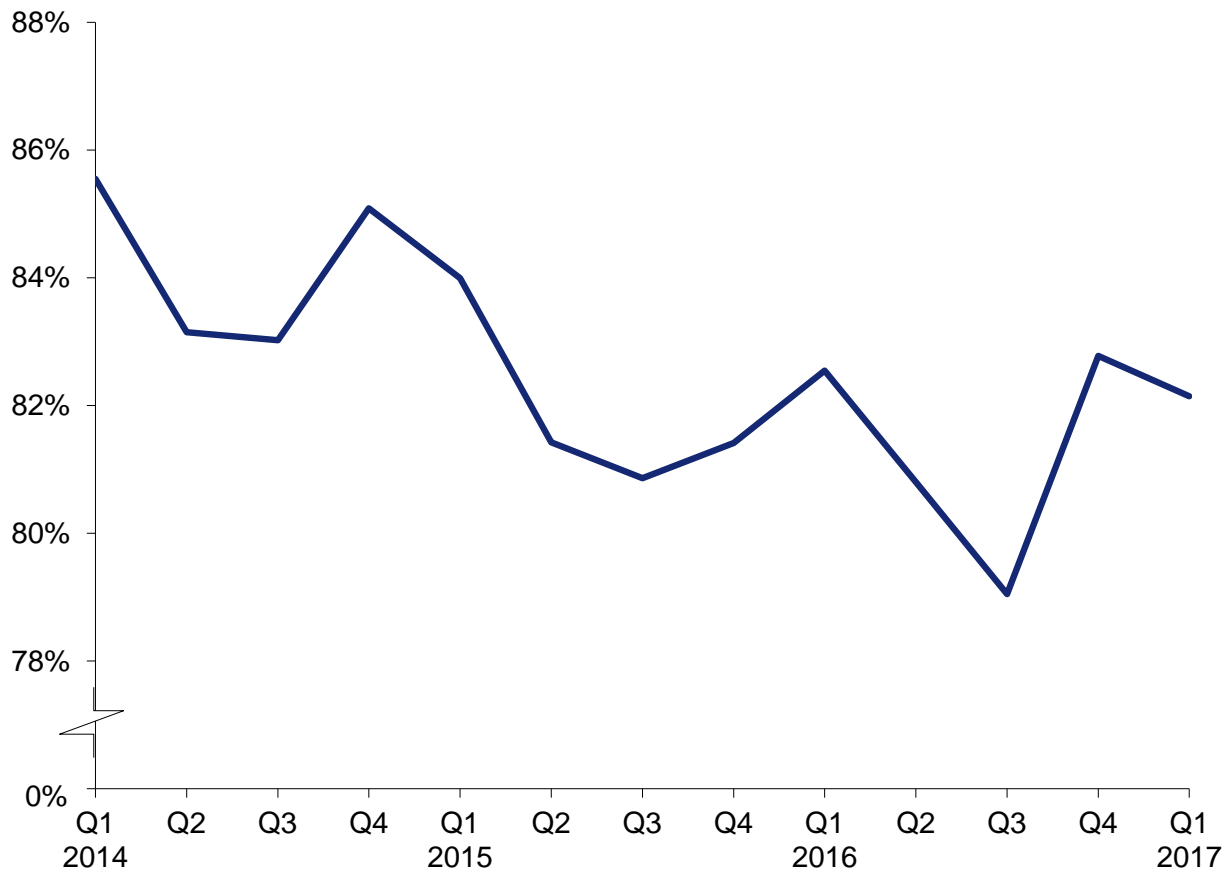
www.gov.uk/government/statistics/total-energy-section-1-energy-trends

Total Energy

Chart 1.6 Net import dependency ([Table 1.3a](#))



In the first quarter of 2017, imports rose by 1.1 per cent, whilst exports fell by 4.8 per cent. As a result, net import dependency rose 3.3 percentage points from the first quarter of 2016 to 37.4 per cent. However, between the fourth quarter of 2016 and the first quarter of 2017 net import dependency fell 4.9 percentage points as net import volumes decreased.

Chart 1.7 Fossil fuel dependency ([Table 1.3a](#))

In the first quarter of 2017 fossil fuel dependency was 82.1 per cent, down 0.4 percentage points from the first quarter of 2016.

1 TOTAL ENERGY

TABLE 1.1. Indigenous production of primary fuels

Million tonnes of oil equivalent

							Primary electricity	
		Total	Coal ¹	Petroleum ²	Natural gas ³	Bioenergy & waste ^{4,5}	Nuclear	Wind, solar and hydro ⁶
2012		121.3r	10.6	48.8	37.4r	7.0r	15.2	2.28
2013		113.9r	8.0	44.5	35.3r	7.7r	15.4	3.02
2014		112.5r	7.3	43.7	35.8r	8.3r	13.9	3.60
2015		123.7r	5.4	49.5	38.8r	9.8r	15.5	4.66
2016 p		125.1r	2.6r	52.0r	39.8r	10.8r	15.4r	4.57r
<i>Per cent change</i>		<i>+1.2</i>	<i>-51.1</i>	<i>+4.9</i>	<i>+2.4</i>	<i>+10.4</i>	<i>-0.4</i>	<i>-1.8</i>
2016	Quarter 1	33.2r	0.6r	13.8	10.2r	3.5r	3.7r	1.30r
	Quarter 2	30.4r	0.6r	13.3	9.6r	2.4r	3.6r	1.04r
	Quarter 3	29.5r	0.6r	12.3	9.5r	1.8r	4.1r	1.13r
	Quarter 4	32.0r	0.7r	12.6r	10.5r	3.1r	4.1r	1.11r
2017	Quarter 1 p	33.2r	0.6r	13.2r	10.7r	3.6r	3.8r	1.39r
<i>Per cent change⁷</i>		<i>-0.1</i>	<i>-11.7</i>	<i>-4.5</i>	<i>+4.7</i>	<i>+1.1</i>	<i>+1.8</i>	<i>+7.1</i>

1. Includes an estimate of slurry.

2. Crude oil, offshore and land, plus condensates and petroleum gases derived at onshore treatment plants.

3. Includes colliery methane, excludes gas flared or re-injected.

4. Includes solid renewable sources (wood, straw and waste), a small amount of renewable primary heat sources (solar, geothermal etc), liquid biofuels and sewage gas and landfill gas.

5. Bioenergy & waste introduced as a separate category from March 2014 - see special feature article in the March 2014 edition of Energy Trends at: www.gov.uk/government/collections/energy-trends-articles

6. Includes solar PV and natural flow hydro.

7. Percentage change between the most recent quarter and the same quarter a year earlier.

1 TOTAL ENERGY

TABLE 1.2 Inland energy consumption: primary fuel input basis

Million tonnes of oil equivalent

	Unadjusted ⁷									Seasonally adjusted and temperature corrected ^{8,9} (annualised rates)								
	Total	Coal ¹	Petroleum ²	Natural gas ³	Bioenergy & waste ^{4,5}	Primary electricity			Total	Coal	Petroleum	Natural gas	Bioenergy & waste	Primary electricity				
						Nuclear	Wind, solar and hydro ⁶	Net imports						Nuclear	Wind, solar and hydro	Net imports		
2012	208.1r	40.9	67.0	73.3r	8.4r	15.2	2.28	1.02	208.2r	41.0r	67.0	73.3	8.4r	15.2	2.28	1.02		
2013	206.8r	39.0r	65.8	72.6r	9.6r	15.4	3.02	1.24	204.0r	38.3r	65.8	70.5r	9.6r	15.4	3.02	1.24		
2014	194.0r	31.5r	66.0r	66.1r	11.2r	13.9	3.60	1.76	199.3r	33.1r	66.0r	69.9r	11.2r	13.9	3.60	1.76		
2015	195.5r	25.1r	67.3r	68.1r	13.1r	15.5	4.66	1.80	198.3r	25.6r	67.3r	70.5r	13.1r	15.5	4.66	1.80		
2016 p	192.8r	12.4	68.0r	76.7r	14.2r	15.4r	4.57	1.51	193.7r	12.6r	68.0r	77.4r	14.2r	15.4r	4.57	1.51		
<i>Per cent change</i>	<i>-1.4</i>	<i>-50.5</i>	<i>+1.1</i>	<i>+12.6</i>	<i>+8.2</i>	<i>-0.4</i>	<i>-1.8</i>	<i>-16.2</i>	<i>-2.3</i>	<i>-50.7</i>	<i>+1.1</i>	<i>+9.9</i>	<i>+8.2</i>	<i>-0.4</i>	<i>-1.8</i>	<i>-16.2</i>		
2016																		
Quarter 1	56.4r	4.9	16.5r	25.1r	4.3r	3.7r	1.30r	0.52	196.8r	15.9r	66.1r	76.6r	17.2r	14.6r	4.40r	2.06		
Quarter 2	43.8r	2.3r	16.9r	16.1r	3.3r	3.6r	1.04r	0.46	190.8r	12.2r	67.7r	76.6r	13.3r	14.6r	4.56r	1.84		
Quarter 3	39.5r	1.9	17.2r	12.1r	2.7r	4.1r	1.13r	0.40	188.5r	10.7r	68.9r	74.8r	10.7r	16.3r	5.43r	1.61		
Quarter 4	53.2r	3.3r	17.3r	23.4r	3.9r	4.1r	1.11r	0.13	198.7r	11.7r	69.4r	81.6r	15.5r	16.1r	3.90r	0.52		
2017																		
Quarter 1 p	54.8r	3.7r	16.4r	24.9r	4.4r	3.8r	1.39r	0.25	195.5r	12.2r	65.7r	79.4r	17.4r	14.9r	4.78r	1.00		
<i>Per cent change</i> ¹⁰	<i>-2.8</i>	<i>-25.0</i>	<i>-0.5</i>	<i>-0.8</i>	<i>+1.4</i>	<i>+1.8</i>	<i>+7.1</i>	<i>-51.6</i>	<i>-0.7</i>	<i>-22.9</i>	<i>-0.5</i>	<i>+3.5</i>	<i>+1.4</i>	<i>+2.1</i>	<i>+8.6</i>	<i>-51.6</i>		

1. Includes net foreign trade and stock changes in other solid fuels.

2. Inland deliveries for energy use, plus refinery fuel and losses, minus the differences between deliveries and actual consumption at power stations.

3. Includes gas used during production and colliery methane. Excludes gas flared or re-injected and non-energy use of gas.

4. Includes solid renewable sources (wood, straw and waste), a small amount of renewable primary heat sources (solar, geothermal, etc.), liquid biofuels, landfill gas and sewage gas.

5. Bioenergy & waste introduced as a separate category from March 2014 - see special feature article in the March 2014 edition of Energy Trends at:

www.gov.uk/government/collections/energy-trends-articles

6. Includes natural flow hydro, but excludes generation from pumped storage stations.

7. Not seasonally adjusted or temperature corrected.

8. Coal and natural gas are temperature corrected; petroleum, bioenergy and waste, and primary electricity are not temperature corrected.

9. For details of temperature correction see the June and September 2011 editions of Energy Trends; Seasonal and temperature adjustment factors were reassessed in June 2013

www.gov.uk/government/collections/energy-trends

10. Percentage change between the most recent quarter and the same quarter a year earlier.

1 TOTAL ENERGY

Table 1.3a Supply and use of fuels

Thousand tonnes of oil equivalent

	2015	2016 p	per cent change	2015 1st quarter	2015 2nd quarter	2015 3rd quarter	2015 4th quarter	2016 1st quarter	2016 2nd quarter	2016 3rd quarter	2016 4th quarter	2017 1st quarter p	per cent change ¹
SUPPLY													
Indigenous production	123,673r	125,135r	+1.2	31,712r	31,858r	27,244r	32,859r	33,204r	30,435r	29,456r	32,039r	33,181	-0.1
Imports	155,134r	149,687r	-3.5	43,153r	35,472r	36,326r	40,183r	39,606r	35,487r	33,359r	41,236r	40,024	+1.1
Exports	-76,644r	-75,763r	-1.1	-16,975r	-19,520r	-20,225r	-19,924r	-19,510r	-18,174r	-20,473r	-17,606r	-18,580	-4.8
Marine bunkers	-2,684r	-2,840r	+5.8	-592r	-747r	-734r	-611r	-574r	-777r	-816r	-674r	-544	-5.2
Stock change ²	+3,907r	+4,907r	+25.6	+3,311r	-757r	+534r	+819r	+5,649r	-1,028r	+37r	+250r	+2,712	
Primary supply	203,387r	201,125r	-1.1	60,610r	46,305r	43,146r	53,327r	58,375r	45,943r	41,563r	55,244r	56,794	-2.7
Statistical difference ³	113r	32r		93r	43r	-66r	43r	128r	-28r	-47r	-21r	-8	
Primary demand	203,274r	201,093r	-1.1	60,516r	46,262r	43,212r	53,283r	58,248r	45,971r	41,611r	55,265r	56,802	-2.5
Transfers ⁴	32	-14r		-1	2r	35	-4	-5r	-1r	-2r	-7r	7	
TRANSFORMATION													
Electricity generation	-41,329r	-37,404	-9.5	-12,115r	-9,604r	-9,117r	-10,492r	-10,531r	-8,497r	-8,242r	-10,134r	-10,161	-3.5
Heat generation	-37,543r	-34,214	-8.9	-10,961r	-8,609r	-8,326r	-9,648r	-9,687r	-7,736r	-7,483r	-9,309r	-9,266	-4.3
Heat generation	-1,088r	-1,152	+5.9	-351r	-240r	-209r	-287r	-357r	-256r	-215r	-324r	-359	+0.8
Petroleum refineries	-152r	-155	+2.2	-69r	-33r	-29r	-20r	-27r	-39r	-70r	-20r	-69	(+)
Coke manufacture	-156	-81r	-48.0	-48	-46	-38	-24	-20r	-20	-21	-20	-23	+12.9
Blast furnaces	-2,277	-1,692r	-25.7	-665	-647	-485	-480	-407r	-425	-432	-428	-418	+2.8
Patent fuel manufacture	-68r	-64r	-6.8	-11r	-19r	-18r	-21	-21r	-11r	-10r	-22r	-15	-28.6
Other ⁵	-44	-46r	+3.5	-10	-9	-12	-12	-12r	-11r	-11r	-11r	-11	-10.6
Energy industry use	12,485r	11,881r	-4.8	3,180r	3,096r	3,030r	3,179r	3,131r	2,947r	2,853r	2,950r	3,033	-3.1
Losses	3,133r	2,823r	-9.9	978r	647r	656r	852r	870r	666r	595r	692r	834	-4.1
FINAL CONSUMPTION													
Iron & steel	1,262r	946r	-25.0	363r	344r	294r	261r	246r	238r	229r	234r	251	+2.0
Other industries	23,099r	22,784r	-1.4	7,046r	5,038r	4,907r	6,107r	6,952r	4,984r	4,754r	6,094r	6,908	-0.6
Transport	54,749r	55,767r	+1.9	12,819r	13,875r	14,321r	13,734r	12,998r	14,210r	14,558r	14,002r	13,068	+0.5
Domestic	40,046r	41,295r	+3.1	16,259r	7,470r	4,996r	11,321r	15,765r	7,804r	4,483r	13,242r	14,962	-5.1
Other Final Users	19,344r	19,875r	+2.7	5,877r	4,310r	3,950r	5,207r	5,729r	4,493r	3,789r	5,864r	5,595	-2.3
Non energy use	7,859r	8,303r	+5.7	1,882r	1,880r	1,973r	2,125r	2,024r	2,132r	2,102r	2,045r	1,999	-1.2
DEPENDENCY⁶													
Net import dependency	38.1%r	36.2%		42.8%r	33.9%r	36.7%r	37.6%r	34.1%r	37.1%r	30.4%r	42.3%r	37.4%	
Fossil fuel dependency	82.1%	81.5%		84.0%r	81.4%r	80.9%r	81.4%r	82.5%r	80.8%r	79.1%r	82.8%r	82.1%	
Low carbon share	16.5%r	17.0%r		14.8%r	16.9%r	17.3%r	17.3%r	16.0%r	17.4%r	19.1%r	16.4%r	16.8%	

1. Percentage change between the most recent quarter and the same quarter a year earlier; (+) represents a positive percentage change greater than 100%.

2. Stock change + = stock draw, - = stock build.

3. Primary supply minus primary demand.

4. Annual transfers should ideally be zero. For manufactured fuels differences occur in the rescreening of coke to breeze.

For oil and petroleum products differences arise due to small variations in the calorific values used.

5. Back-flows from the petrochemical industry - see article in the June 2016 edition of Energy Trends.

6. See article in the December 2010 edition of Energy Trends.

1 TOTAL ENERGY

Table 1.3b Supply and use of fuels

Thousand tonnes of oil equivalent

	2016 Quarter 1									2017 Quarter 1 p								
	Coal	Manufactured fuels ⁴	Primary oil	Petroleum Products	Natural gas ⁵	Bioenergy & waste ⁶	Primary electricity	Electricity	Heat sold	Coal	Manufactured fuels ⁴	Primary oil	Petroleum Products	Natural gas ⁵	Bioenergy & waste ⁶	Primary electricity	Electricity	Heat sold
SUPPLY																		
Indigenous production	631	-	13,791	-	10,211	3,547	5,025	-	-	557	-	13,164	-	10,690	3,587	5,183	-	-
Imports	1,772	204	12,589	9,664	14,012	820	-	545	-	1,612	133	13,625	8,972	14,515	835	-	332	-
Exports	-77	-4	-11,047	-6,546	-1,734	-74	-	-28	-	-89	-5	-10,766	-6,242	-1,326	-71	-	-83	-
Marine bunkers	-	-	-	-574	-	-	-	-	-	-	-	-	-544	-	-	-	-	-
Stock change ¹	+2,380	-1	+386	+159	+2,725	-	-	-	-	+1,427	+46	+447	-341	+1,134	-	-	-	-
Primary supply	4,706	199	15,719	2,704	25,214	4,293	5,025	516	-	3,507	174	16,470	1,845	25,013	4,351	5,183	250	-
Statistical difference ²	+47	-1	+1	+34	+54	+0	-	-7	-	-8	+0	-18	-55	+69	-	-	+5	-
Primary demand	4,659	199	15,718	2,670	25,160	4,293	5,025	524	-	3,515	174	16,489	1,900	24,944	4,351	5,183	245	-
Transfers ³	-	10	-309	+305	+20	-31	-1,299	+1,299	-	-	+4	-608	+604	61	-53	-1,391	+1,391	-
TRANSFORMATION	-4,239	43	-15,409	15,174	-6,877	-2,503	-3,726	6,569	436	-3,144	85	-15,880	15,635	-7,511	-2,547	-3,792	6,555	436
Electricity generation	-3,576	-131	-	-161	-6,188	-2,475	-3,726	6,569	-	-2,423	-135	-	-132	-6,821	-2,518	-3,792	6,555	-
Heat generation	-47	-13	-	-15	-689	-28	-	-	436	-50	-13	-	-15	-689	-28	-	-	436
Petroleum refineries	-	-	-15,536	15,509	-	-	-	-	-	-	-	-16,007	15,939	-	-	-	-	-
Coke manufacture	-337	317	-	-	-	-	-	-	-	-367	344	-	-	-	-	-	-	-
Blast furnaces	-240	-167	-	-	-	-	-	-	-	-266	-152	-	-	-	-	-	-	-
Patent fuel manufacture	-39	36	-	-19	-	-	-	-	-	-38	41	-	-18	-	-	-	-	-
Other ⁷	-	-	127	-140	-	-	-	-	-	-	-	127	-138	-	-	-	-	-
Energy industry use	-	106	-	1,045	1,377	-	-	534	68	-	103	-	1,044	1,287	-	-	531	68
Losses	-	21	-	-	99	-	-	749	-	-	23	-	-	93	-	-	718	-
FINAL CONSUMPTION	421	126	-	17,104	16,827	1,759	-	7,108	370	371	137	-	17,095	16,115	1,752	-	6,943	370
Iron & steel	7	75	-	3	100	-	-	61	-	6	77	-	3	103	-	-	61	-
Other industries	286	-	-	1,182	2,927	480	-	1,925	153	243	-	-	1,172	2,942	483	-	1,915	153
Transport	3	-	-	12,673	-	221	-	100	-	3	-	-	12,730	-	235	-	100	-
Domestic	117	39	-	887	11,096	862	-	2,743	22	114	49	-	865	10,445	811	-	2,656	22
Other final users	8	-	-	455	2,596	196	-	2,279	196	4	-	-	447	2,515	223	-	2,210	196
Non energy use	-	11	-	1,903	110	-	-	-	-	-	12	-	1,878	110	-	-	-	-

1. Stock fall +, stock rise -.

2. Primary supply minus primary demand.

3. Annual transfers should ideally be zero. For manufactured fuels differences occur in the rescreening of coke to breeze. For oil and petroleum products differences arise due to small variations in the calorific values used.

4. Includes all manufactured solid fuels, benzole, tars, coke oven gas and blast furnace gas.

5. Includes colliery methane.

6. Includes geothermal, solar heat and biofuels for transport; wind and wave electricity included in primary electricity figures.

7. Back-flows from the petrochemical industry - see article in the June 2016 edition of Energy Trends.

1 Total Energy

Table 1.3c Seasonally adjusted and temperature corrected final energy consumption data¹

Thousand tonnes of oil equivalent													
	2015	2016 p	per cent change	2015 1st quarter	2015 2nd quarter	2015 3rd quarter	2015 4th quarter	2016 1st quarter	2016 2nd quarter	2016 3rd quarter	2016 4th quarter	2017 1st quarter p	per cent change ²
By consuming sector													
Final Consumption (unadjusted)													
Industry	24,362r	23,730r	-2.6	7,410r	5,382r	5,202r	6,368r	7,198r	5,221r	4,982r	6,329r	7,159	-0.5
Transport	54,749r	55,767r	+1.9	12,819r	13,875r	14,321r	13,734r	12,998r	14,210r	14,558r	14,002r	13,068	+0.5
Domestic	40,046r	41,295r	+3.1	16,259r	7,470r	4,996r	11,321r	15,765r	7,804r	4,483r	13,242r	14,962	-5.1
Other final users	19,344r	19,875r	+2.7	5,877r	4,310r	3,950r	5,207r	5,729r	4,493r	3,789r	5,864r	5,595	-2.3
Total	138,501r	140,668r	+1.6	42,365r	31,037r	28,468r	36,630r	41,690r	31,729r	27,812r	39,437r	40,783	-2.2
Final Consumption (Seasonally and temperature adjusted)													
Industry	24,361r	23,730r	-2.6	6,279r	6,054r	6,054r	5,973r	6,069r	5,905r	5,801r	5,956r	5,997	-1.2
Transport	54,748r	55,766r	+1.9	13,634r	13,673r	13,750r	13,692r	13,863r	13,969r	13,955r	13,980r	13,969	+0.8
Domestic	42,143r	42,747r	+1.4	10,756r	10,122r	10,556r	10,709r	10,738r	10,853r	10,458r	10,698r	10,682	-0.5
Other final users	19,963r	20,302r	+1.7	5,070r	4,793r	5,056r	5,044r	5,019r	5,075r	5,076r	5,132r	4,988	-0.6
Total	141,215r	142,545r	+0.9	35,740r	34,641r	35,416r	35,418r	35,689r	35,800r	35,290r	35,766r	35,637	-0.1
By fuel													
Final Consumption (unadjusted)													
Gas	42,023r	43,379r	+3.2	17,359r	7,719r	5,131r	11,813r	16,717r	8,137r	4,464r	14,061r	16,006	-4.3
Electricity	26,092r	26,122r	+0.1	7,174r	6,161r	6,052r	6,705r	7,108r	6,095r	5,966r	6,952r	6,943	-2.3
Other	70,385r	71,167r	+1.1	17,831r	17,157r	17,285r	18,112r	17,864r	17,497r	17,383r	18,423r	17,836	-0.2
Total	138,501r	140,668r	+1.6	42,365r	31,037r	28,468r	36,630r	41,690r	31,729r	27,812r	39,437r	40,784	-2.2
Final Consumption (Seasonally and temperature adjusted)													
Gas	44,236r	44,838r	+1.4	11,415r	10,499r	11,199r	11,123r	11,224r	11,368r	10,914r	11,332r	11,183	-0.4
Electricity	26,219r	26,211r	-0.0	6,606r	6,600r	6,601r	6,413r	6,564r	6,541r	6,550r	6,556r	6,453	-1.7
Other	70,760r	71,496r	+1.0	17,719r	17,543r	17,616r	17,882r	17,901r	17,891r	17,826r	17,878r	18,001	+0.6
Total	141,215r	142,545r	+0.9	35,740r	34,641r	35,416r	35,418r	35,689r	35,800r	35,290r	35,766r	35,637	-0.1

1. For methodology see articles in Energy Trends (June 2011 and September 2011 editions)

2. Percentage change between the most recent quarter and the same quarter a year earlier.

Section 2 – Solid Fuels and Derived Gases

Key results show:

Overall coal production in the first quarter of 2017 fell to a new record low, down 12 per cent (0.1 million tonnes) compared with the first quarter of 2016 with further contraction in surface mine output, including a new record low in January 2017 when some coal mines had a seasonal shut down. **(Chart 2.1)**

Coal imports fell 9.1 per cent (0.2 million tonnes) on levels shown in the first quarter of 2016, as demand fell, especially for use by electricity generators. **(Charts 2.1 and 2.2)**

The demand for coal by electricity generators in the first quarter of 2017 was 32 per cent (1.8 million tonnes) lower than demand in the first quarter of 2016 due to a fall in coal generation capacity, with the closures of Ferrybridge C and Longannet in March 2016. There was a seasonal demand increase in the first quarter of 2017, along with a small increase in generation from Eggborough and Fiddlers Ferry coming back online as part of the Supplemental Balancing Reserve. The SBR went off line at the end of February 2017. **(Chart 2.3)**

Total stock levels were down 41 per cent to 6.1 million tonnes compared to a year earlier. This was due to closure of coal fired power plants and generators using held stock for electricity generation while purchasing less coal from the UK and overseas. **(Chart 2.4)**

Relevant tables

2.1: Supply and consumption of coal	Page 22
2.2: Supply and consumption of coke oven coke, coke breeze and other manufactured solid fuels	Page 23
2.3: Supply and consumption of coke oven gas, blast furnace gas, benzole and tars	Page 24

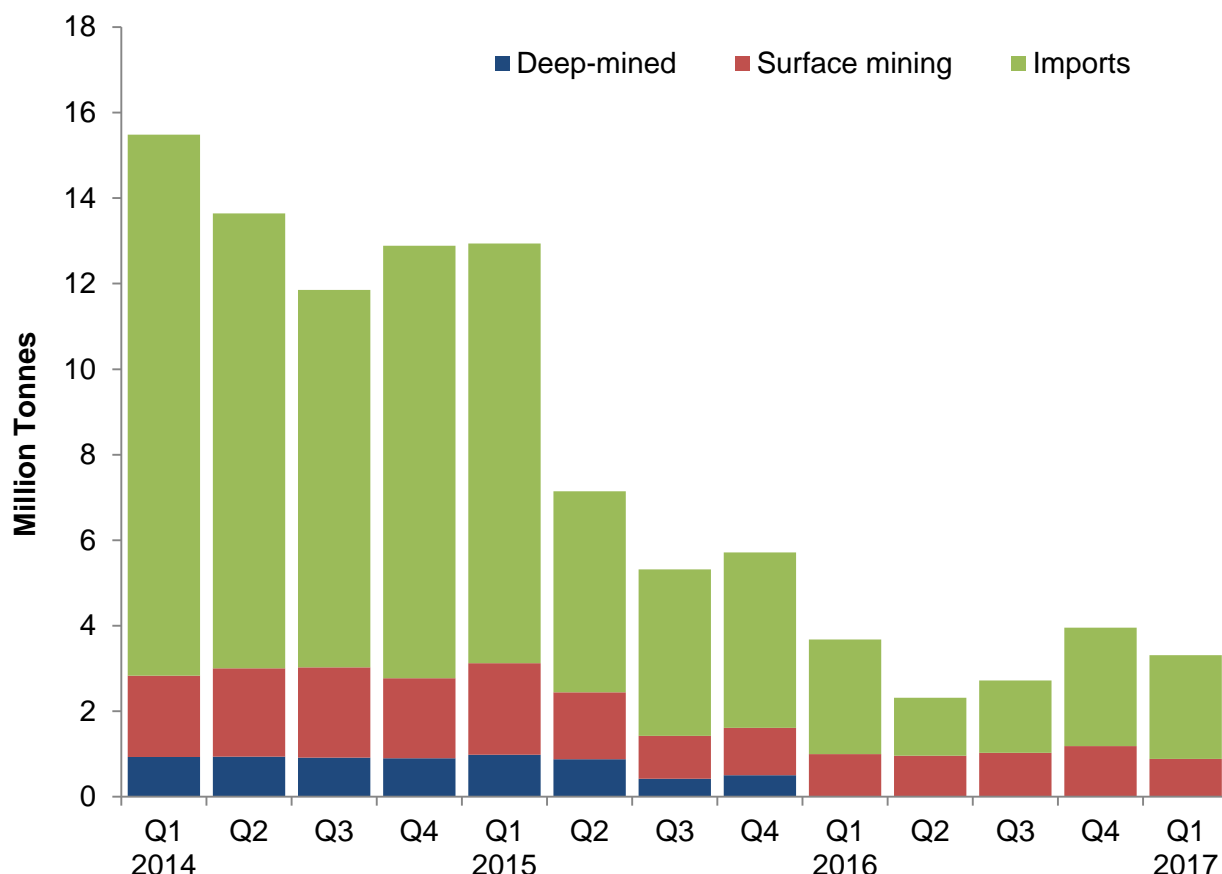
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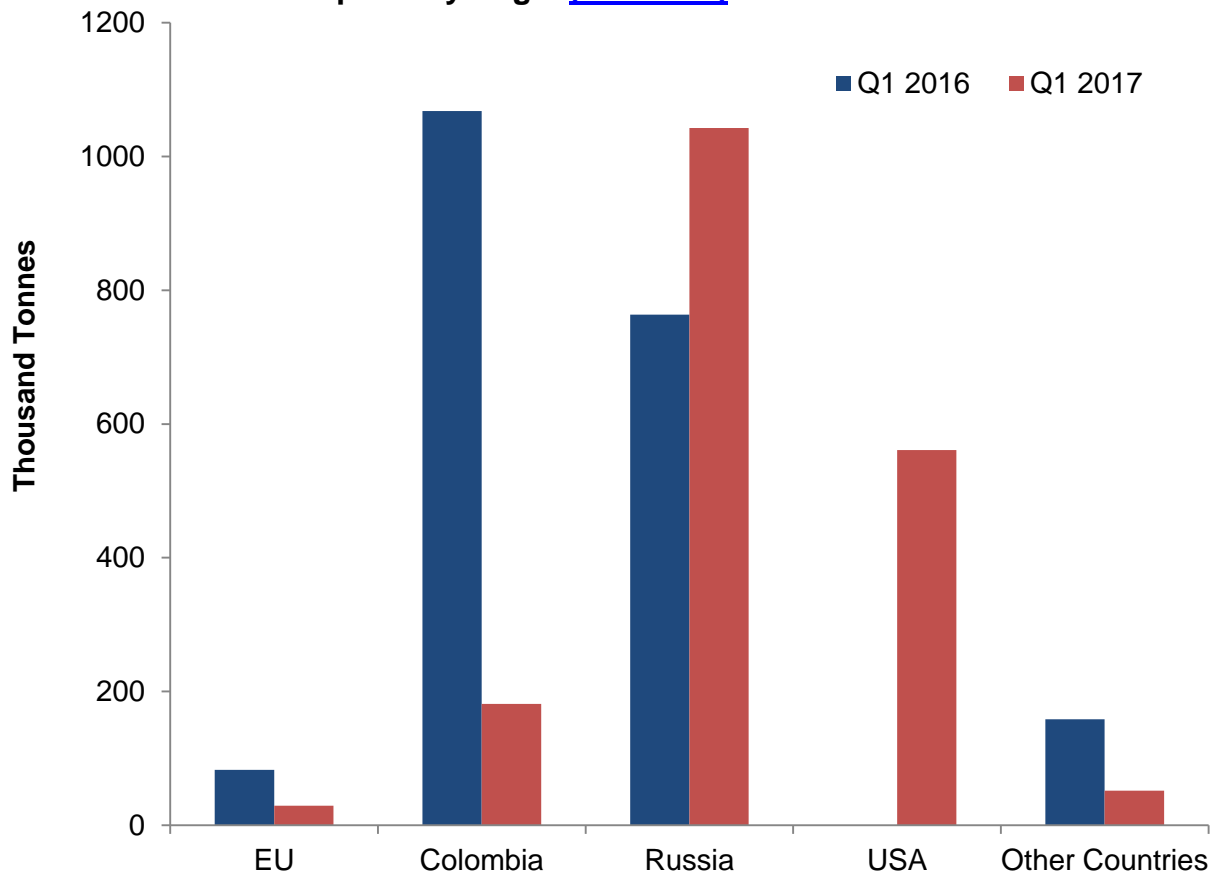
Chart 2.1 Coal supply ([Table 2.1](#))

Coal production in the first quarter of 2017 reached a record low of 0.9 million tonnes, 12 per cent down compared to the first quarter of 2016. The bulk of this decrease came from the contraction in surface mine output as deep mine production is now under 1 per cent of production with only seven small deep mines remaining. The falls were due to decreased demand, particularly for electricity generation, and seasonal shut downs in January 2017 which led to record low production for that month.

Table 2A Coal imports by origin

	Thousand Tonnes			
	2015	2016p	2016 Q1	2017 Q1p
European Union	614	439	106	42
Russia	8,380	2,292	937	1,347
Colombia	6,553	2,667	1,068	181
USA	5,018	1,420	318	739
Australia	910	778	43	56
Other Countries	1,042	898	204	67
Total Imports	22,518	8,494	2,675	2,431

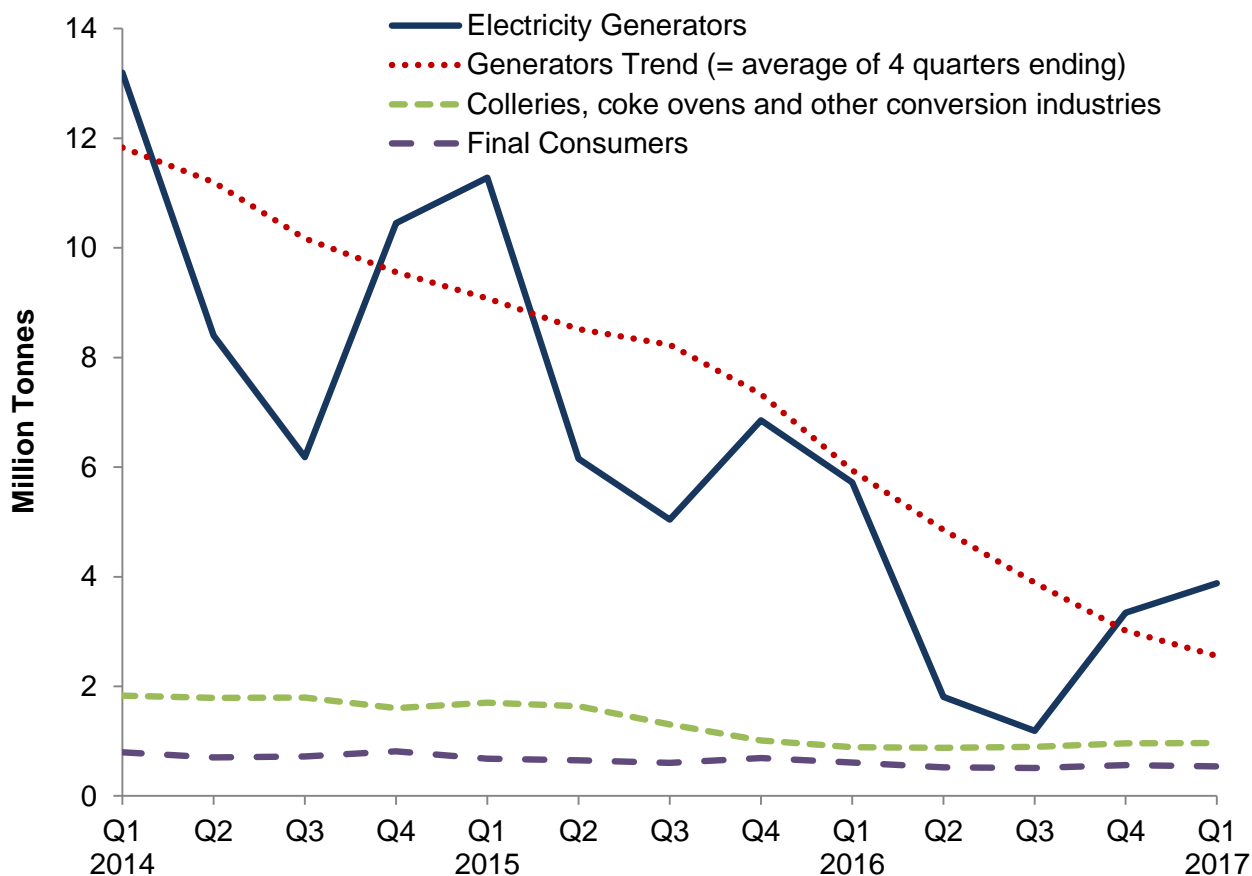
Imports of coal in the first quarter of 2017 were 9.1 per cent lower than in the first quarter of 2016 at 2.4 million tonnes. The decrease reflects reduced consumption by electricity generators with the closures of Ferrybridge C and Longannet in March 2016. There was a seasonal demand increase from coal-fired power stations in the first quarter of 2017, along with a small increase in generation from Eggborough and Fiddlers Ferry coming back online as part of the Supplemental Balancing Reserve (SBR). The SBR went off line at the end of February 2017.

Chart 2.2 Steam coal imports by origin ([Table 2.4](#))

In the first quarter of 2017, steam coal comprised 77 per cent of coal imports and coking coal comprised 22 per cent. Imports of both fell compared to the first quarter of 2016, with steam coal imports down 10 per cent to 1.9 million tonnes and coking coal imports down 7.5 per cent to 0.5 million tonnes.

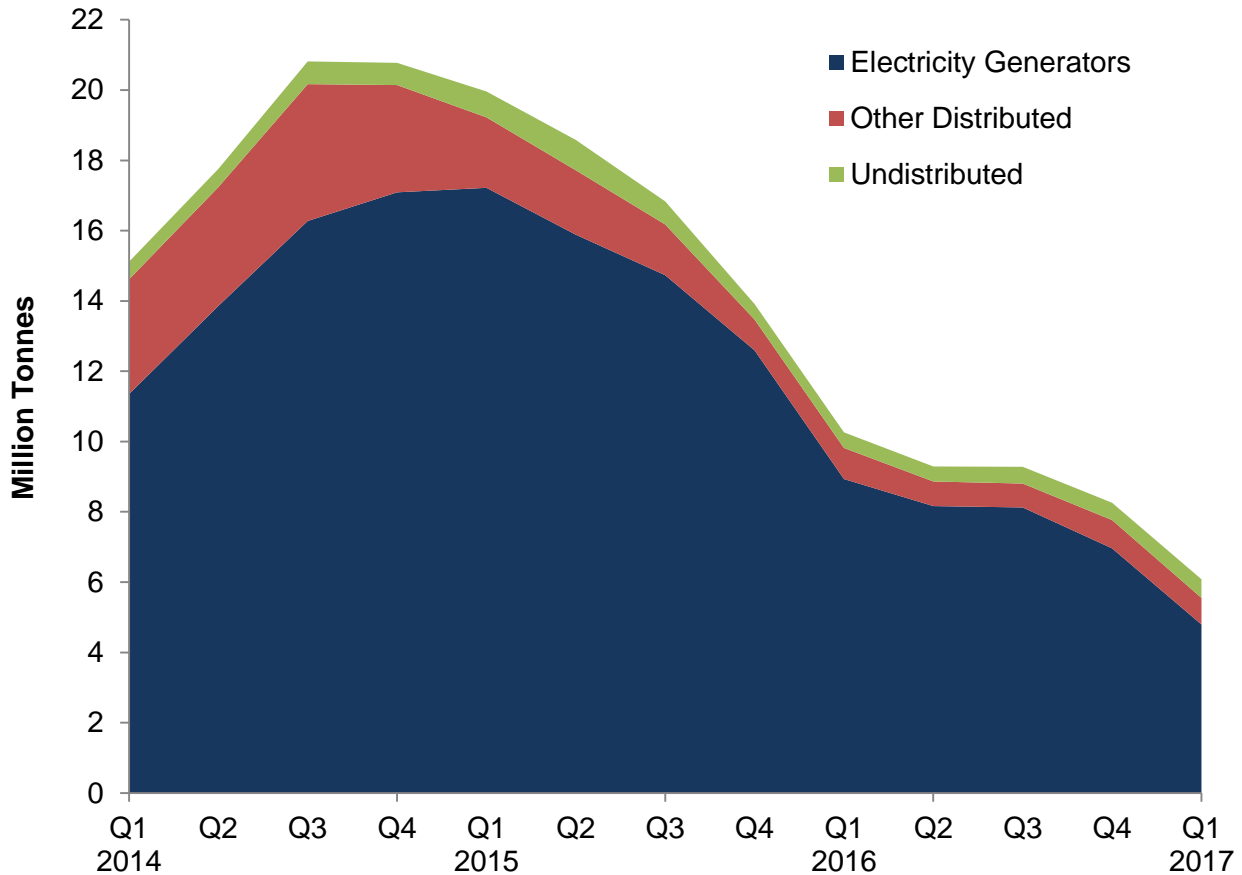
Russia overtook Colombia as the biggest supplier of steam coal providing 56 per cent of steam coal imports in the first quarter of 2017. The USA became the second largest supplier, providing 30 per cent (561 thousand tonnes). The USA had not exported any steam coal in the first quarter of 2016 and had only exported 373 thousand tonnes of steam coal to the UK for the whole of 2016. Steam coal imports from Colombia fell by 83 per cent.

Chart 2.3 Coal consumption ([Table 2.1](#))



Total demand for coal in the first quarter of 2017, at 5.4 million tonnes, was 25 per cent lower than in the first quarter of 2016. Consumption by electricity generators was down by a third to 3.9 million tonnes. Electricity generators accounted for 72 per cent of total coal use in the first quarter of 2017 compared with 79 per cent a year earlier.

In the first quarter of 2017, sales to industrial users fell by 15 per cent to 0.4 million tonnes whilst sales to other final consumers (including domestic) decreased by 5.0 per cent to 0.2 million tonnes. Coal used in blast furnaces was up 11 per cent compared to the first quarter of 2016, to 0.4 million tonnes.

Chart 2.4 Coal stocks ([Table 2.1](#))

Coal stocks fell seasonally by 2.2 million tonnes during the first quarter of 2017 and at the end of March stood at 6.1 million tonnes (a new record low). This was 4.2 million tonnes lower than at the end of March 2016.

The level of coal stocks at power stations at the end of the first quarter of 2017 was 4.8 million tonnes, 4.1 million tonnes lower than at the end of March 2016. This reflected the closure of two coal-fired power stations and generators using held stock for electricity generation, reducing purchases from the UK and overseas.

Stocks held by coke ovens were 0.4 million tonnes at the end of the first quarter of 2017, this was 12 thousand tonnes lower than stock levels at the end of March 2016.

Stocks held by producers (undistributed stocks) at the end of the first quarter of 2017 were 0.5 million tonnes, 0.1 million tonnes higher than at the end of March 2016.

2 SOLID FUEL AND DERIVED GASES

Table 2.1 Supply and consumption of coal

	Thousand tonnes												
	2015	2016 p	per cent change	2015 1st quarter	2015 2nd quarter	2015 3rd quarter	2015 4th quarter	2016 1st quarter	2016 2nd quarter	2016 3rd quarter	2016 4th quarter	2017 1st quarter p	per cent change ¹
SUPPLY													
Indigenous production	8,598	4,178	-51.4	3,122	2,441	1,424	1,612	1,001	962	1,027	1,188	883	-11.7
Deep mined	2,784	22	-99.2	980	880	420	504	7	6	5	5	5	-22.4
Surface mining ²	5,814	4,156	-28.5	2,142	1,561	1,004	1,108	994	957	1,022	1,183	878	-11.6
Imports ⁴	22,518	8,494	-62.3	9,817r	4,707r	3,891	4,103	2,675	1,356	1,694	2,768	2,431	-9.1
Exports ⁵	385	443	+15.1	111	75	104	96	103	76	137	128	118	+15.0
Stock change ⁶	+6,862r	+5,655r	-17.6	+815r	+1,378r	+1,749r	+2,920r	+3,651r	+971r	+9r	+1,023r	+2,177	-40.4
Total supply	37,593r	17,883r	-52.4	13,643r	8,451r	6,960r	8,539r	7,225	3,213r	2,594r	4,851r	5,373	-25.6
Statistical difference	-18r	-6r		-19r	+11r	+6r	-16r	+2	+4r	-1r	-11	-10	
Total demand	37,612r	17,889r	-52.4	13,662r	8,440r	6,954r	8,555r	7,223	3,209r	2,595r	4,863r	5,383	-25.5
TRANSFORMATION													
Electricity generation	34,988r	15,678	-55.2	12,983r	7,791r	6,349r	7,865r	6,611r	2,685	2,081r	4,301r	4,845	-26.7
Heat generation ⁷	213	213	-	80	42r	32	58	76r	43	29r	65r	80	+5.8
Coke manufacture	3,673	1,821	-50.4	1,165	1,083	880	545	443	438	464	475	482	+8.8
Blast furnaces	1,544	1,364	-11.7	423	447	330	344	316	345	346	357	350	+11.1
Patent fuel manufacture	228r	223	-2.5	32r	64r	65r	66	55	51	55	62	54	-1.7
Energy industry use	-	-		-	-	-	-	-	-	-	-	-	
FINAL CONSUMPTION	2,624r	2,211r	-15.7	679r	649r	605r	691	612r	524r	514r	562r	538	-12.0
Iron & steel	44r	35r	-21.7	11r	12	11r	10	10	10	7r	7r	9	-13.0
Other industries	1,999r	1,580r	-20.9	501r	504r	474r	519	431	381r	393r	376	367	-14.8
Domestic	552r	550r	-0.4	158r	127	113r	154	156	123r	101	171r	152	-2.4
Other final users	29r	47r	+60.5	8r	6r	7r	8	15r	11	12r	9r	10	-32.5
Stocks at end of period													
Distributed stocks	13,471r	7,766r	-42.4	19,224r	17,718r	16,176r	13,471r	9,817r	8,863r	8,805r	7,766r	5,552	-43.5
Of which:													
Major power producers ⁸	12,595r	6,962r	-44.7	17,218r	15,885r	14,733r	12,595r	8,933r	8,163r	8,125r	6,962r	4,794	-46.3
Coke ovens	547	605r	+10.6	836	955	742	547r	457r	488r	322r	605r	445	-2.7
Undistributed stocks	441r	492r	+11.4	736r	863r	656r	441r	444	427	476	492r	529	+19.2
Total stocks⁹	13,913r	8,258r	-40.6	19,960r	18,581	16,832r	13,913r	10,261r	9,291r	9,281r	8,258r	6,081	-40.7

1. Percentage change between the most recent quarter and the same quarter a year earlier.

2. The term 'surface mining' has now replaced opencast production. Opencast production is a surface mining technique.

3. Not produced since 2013 as the only mine producing slurry has ceased trading

4. For a detailed breakdown of UK Imports by country and grade of coal refer to Table 2.4 Coal imports (internet table only).

5. Trade is counted as an export under three conditions, when it is recorded as an import and is subsequently exported; it enters the UK port with the intention of being imported but due to a change of ownership at the port it is exported without having cleared the port; and when items leave the warehouse and are exported. Trade is not classified as exports when it is resting at a UK port and the UK is not the intended final destination.

6. Stock change + = stock draw, - = stock build.

7. Heat generation is based on an annual figure and is then split over a quarterly period. The 2016 heat generation figure will not be published until the end of July 2017. Therefore, the 2015 figure is used as an estimate for 2017.

8. This includes stocks held at ports.

9. For some quarters, closing stocks may not be consistent with stock changes, due to additional stock adjustments

2 SOLID FUEL AND DERIVED GASES

Table 2.2 Supply and consumption of coke oven coke, coke breeze and other manufactured solid fuels

	<i>Thousand tonnes</i>												
	2015	2016 p	<i>per cent change</i>	2015 1st quarter	2015 2nd quarter	2015 3rd quarter	2015 4th quarter	2016 1st quarter	2016 2nd quarter	2016 3rd quarter	2016 4th quarter	2017 1st quarter p	<i>per cent change³</i>
SUPPLY													
Indigenous production	2,965	1,593	-46.3	895	868	727	474	376	385	409	424	408	+8.6
Coke Oven Coke	2,716	1,332	-51.0	854	800	658	404	320	319	344	348	346	+8.1
Coke Breeze	18	16	-10.6	5	5	4	5	4	4	4	4	4	+10.2
Other MSF	231	245	+6.2	36	64	65	66	51	61	61	71	57	+11.4
Imports	1,132	1,251r	+10.5	302	290	215	325	287	284	284	397r	187	-34.8
Exports	111	22	-79.9	23	74	7	8	6	4	6	6	7	+23.7
Stock change ¹	64	-126	(-)	+73	+37	-50	+4	-2	+21	-15	-130	+65	
Transfers	-3	-4		-2	-1	-	-	-1	-1	-0	-2	-1	
Total supply	4,047	2,691	-33.5	1,246	1,121	885	796	654	685	671	682	652	-0.3
Statistical difference	0	0		-0	-	0	-0	-0	-	0	-0	-0	
Total demand	4,047	2,691	-33.5	1,246	1,121	885	796	654	685	671	682	652	-0.3
TRANSFORMATION	3,257	2,140	-34.3	1,009	908	705	635	525	548	533	535	508	-3.1
Coke manufacture	-	-		-	-	-	-	-	-	-	-	-	
Blast furnaces	3,257	2,140	-34.3	1,009	908	705	635	525	548	533	535	508	-3.1
Energy industry use	-	-		-	-	-	-	-	-	-	-	-	
FINAL CONSUMPTION	790	551	-30.2	237	213	179	161	130	137	138	146	144	+10.9
Iron & steel	539	316	-41.4	165	151	125	98	75	79	84	78	76	+0.9
Other industries	17	-	-100.0	10	6	-	-	-	-	-	-	-	
Domestic	235	236	+0.4	62	56	54	63	55	58	55	68	68	+24.6
Stocks at end of period²	1,124	1,249r	+11.2	1,115	1,028	1,038	1,124	1,126	1,108	1,142	1,249r	1,187	+5.5

1. Stock change + = stock draw, - = stock build.

2. For some quarters, closing stocks may not be consistent with stock changes, due to additional stock adjustments

3. Percentage change between the most recent quarter and the same quarter a year earlier; (+) represents a positive percentage change greater than 100%.

2 SOLID FUEL AND DERIVED GASES

Table 2.3 Supply and consumption of coke oven gas, blast furnace gas, benzole and tars

	GWh												
	2015	2016 p	per cent change	2015 1st quarter	2015 2nd quarter	2015 3rd quarter	2015 4th quarter	2016 1st quarter	2016 2nd quarter	2016 3rd quarter	2016 4th quarter	2017 1st quarter p	per cent change ¹
SUPPLY													
Indigenous production	22,156	14,089	-36.4	6,995	6,315	4,972	3,874	3,406	3,603	3,424	3,656	3,541	+4.0
Coke oven gas	6,890	3,468	-49.7	2,264	2,030	1,595	1,000	870	836	855	907	960	+10.3
Blast furnace gas	14,131	10,090	-28.6	4,359	3,941	3,117	2,713	2,403	2,645	2,439	2,603	2,444	+1.7
Benzole & tars	1,136	531	-53.2	371	344	260	161	134	123	129	145	138	+3.0
Transfers	420	344	-18.2	92	96	99	132	127	106	64	47	56	-55.8
Total supply	22,576	14,433	-36.1	7,088	6,411	5,071	4,006	3,534	3,709	3,487	3,703	3,597	+1.8
Statistical difference	+41r	+9r		+33	-14	+5	+17	-6r	+10	+10r	-5r	+5	
Total demand	22,535	14,424r	-36.0	7,054	6,425	5,066	3,989	3,540r	3,699	3,477r	3,708r	3,592	+1.5
TRANSFORMATION	9,704	6,875r	-29.2	3,192	2,580	2,053	1,880	1,669r	1,682r	1,653r	1,871r	1,716	+2.8
Electricity generation	9,107	6,278r	-31.1	3,042	2,430	1,904	1,731	1,520r	1,533r	1,504r	1,721r	1,566	+3.1
Heat generation ²	598	598	-	149	149	149	149	149	149	149	149	149	-
Energy industry use	8,330	4,846	-41.8	2,581	2,358	1,894	1,497	1,236	1,235	1,150	1,226	1,200	-2.9
Losses	2,646	1,116	-57.8	674	912	737	323	248	337	318	213	272	+9.6
FINAL CONSUMPTION	1,855	1,587r	-14.5	608	576	383	289	387r	445r	356r	399r	404	+4.4
Iron & steel	719	1,056r	+46.8	237	231	123	128	254r	322r	227r	254r	267	+5.2
Other industries ³	-	-		-	-	-	-	-	-	-	-	-	
Non-Energy Use ⁴	1,136	531	-53.2	371	344	260	161	134	123	129	145	138	+3.0

1. Percentage change between the most recent quarter and the same quarter a year earlier; (+) represents a positive percentage change greater than 100%.

2. Heat generation is based on an annual figure and is then split over a quarterly period. The 2016 heat generation figure will not be published until the end of July 2017. Therefore, the 2015 figure is used as an estimate for 2017.

3. The main industrial consumer of derived gases Monckton coke-works (also a producer of them) closed in December 2014.

4. From 2009, unclassified final consumption for benzole and tars has been recorded under non energy use

Section 3 – Oil and Oil Products

Key results show:

Total indigenous UK production of crude oil and NGLs (Natural Gas Liquids) in Q1 2017 was 4.6 per cent lower than a year ago, driven largely by a decrease in production at fields feeding into the Sullom Voe terminal. **(Chart 3.1)**

Indigenous production of petroleum products was 3.0 per cent higher in the first quarter of 2017 compared with the same quarter in 2016, partly because Q1 2016 production was affected by maintenance that had been delayed from 2015. The long term trend is one of ongoing decline in UK refinery production **(Chart 3.2)**

The pattern of trade showed substantial variation compared to last year. Imports of petroleum products decreased by 7.3 per cent and exports decreased by 4.7 per cent. The UK was a net importer of petroleum products in Q1 2017 by 2.5 million tonnes. **(Chart 3.2)**

Net imports of primary oils (crude oil, NGLs and feedstocks) in Q1 2017 nearly doubled to 2.6 million tonnes due to lower indigenous production and increased refinery demand. The UK's refineries relied more on imported oil, with net imports meeting around 10 per cent of the UK's refinery demand, up from 2.7 per cent in Q1 2016. **(Chart 3.3)**

Demand in Q1 2017 was down 0.3 per cent compared to the first quarter of 2016. Demand for key transport fuels increased by 0.5 per cent compared with Q1 2016. Motor spirit deliveries were down by 2.4 per cent, whilst deliveries of DERV (road diesel) and aviation fuels were up by 0.5 per cent and 5.3 per cent respectively. **(Chart 3.5)**

Overall stocks of crude oil and petroleum products were up by 4.1 per cent at end of the Q1 2017 compared to a year earlier. **(Chart 3.6)**

Relevant tables

3.1: Supply and use of crude oil, natural gas liquids and feedstocks	Page 32
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Chart 3.1 Production and trade of crude oil and NGLs (Table 3.1)



Indigenous production of primary oils was down 4.6 per cent with a crude oil contraction of 6.0 per cent, contrasting with an increase in NGL production of 16 per cent.

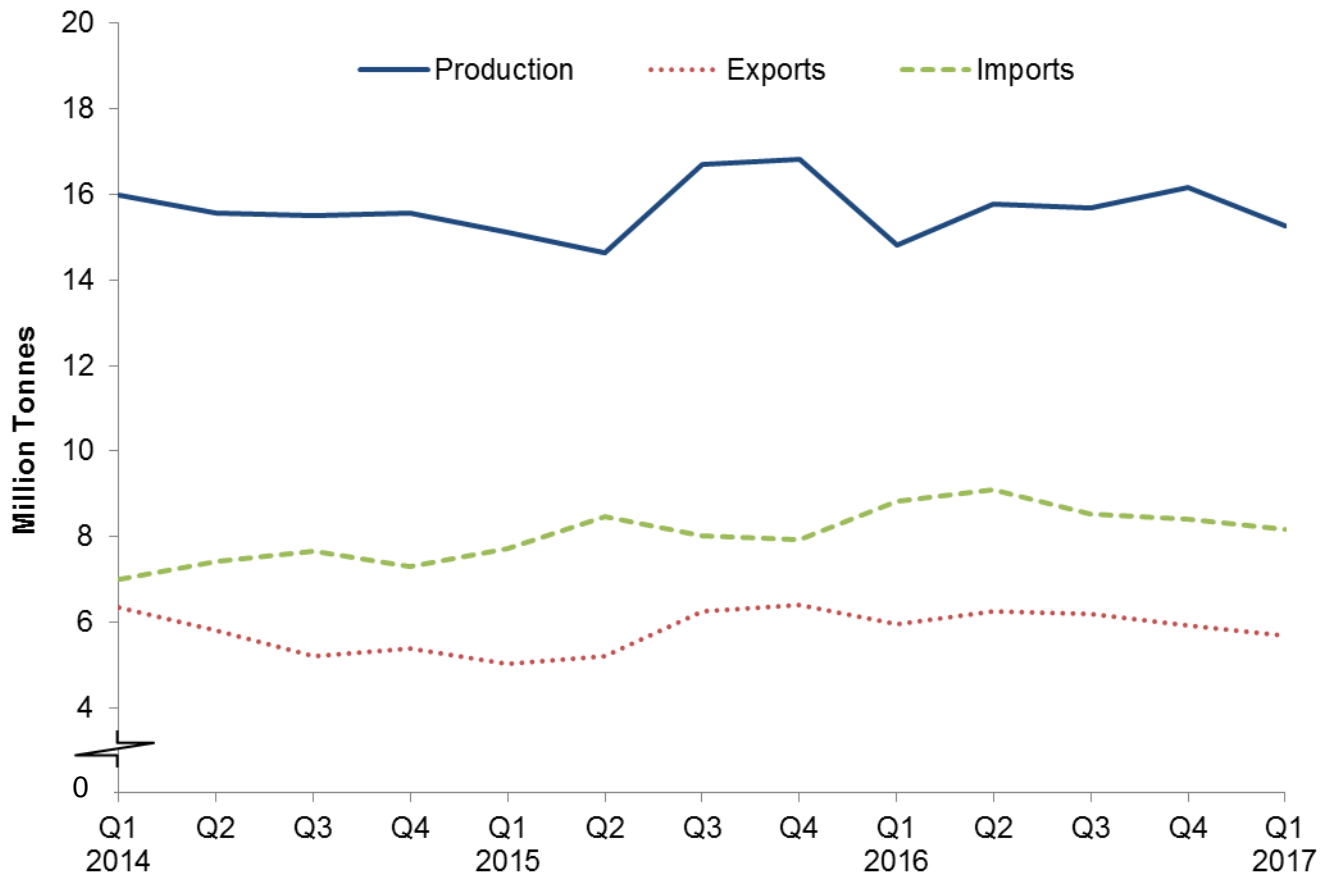
The opening of new fields such as Golden Eagle has seen a boost to production since early 2015, with production in Q1 2016 particularly high and a recent decline in output from fields feeding into Sullom Voe.

NGL production has been boosted because oil extracted from new fields contains a higher proportion of NGLs.

Imports of crude oil and NGLs were 12 per cent higher compared with Q1 2016, reflecting lower production and increased refinery demand for feedstocks.

Exports of crude oil and NGLs stayed broadly the same whereas exports of feedstocks decreased by 44 per cent, again due to increased refinery demand this quarter.

Overall, net imports of primary oils (crude, NGLs and feedstocks) were 2.6 million tonnes in Q1 2017, compared with 1.4 million tonnes in the same quarter of 2016.

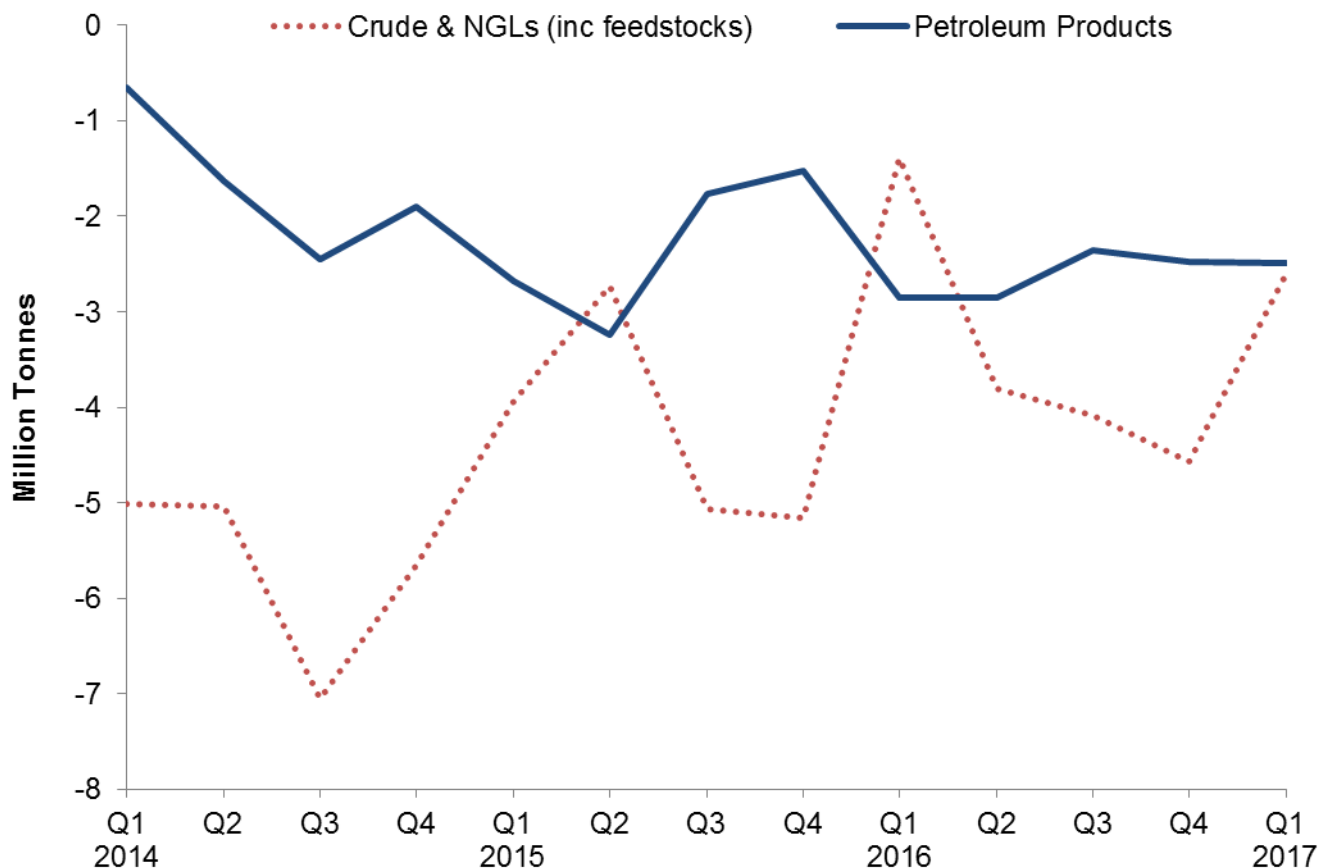
Chart 3.2 Production and trade of petroleum products (Table 3.2)

Indigenous production of petroleum products in Q1 2017 was 3.0 per cent higher compared with the same quarter in 2016. This is partly due to maintenance postponed from 2015 to Q1 2016, which affected production figures last year.

Compared to Q1 2016 imports of petroleum products in Q1 2017 decreased by 7.3 per cent and exports decreased by 4.7 per cent. The majority of petroleum products saw a decrease in imports, particularly for motor spirit (down 16 per cent). Demand for motor spirit has been down this quarter, alongside higher production compared to this period last year. Exports of motor spirit were stable, but all other products except petroleum gases saw a decrease in exports.

In overall terms, the UK was a net importer (2.5 million tonnes) of petroleum products in Q1 2017.

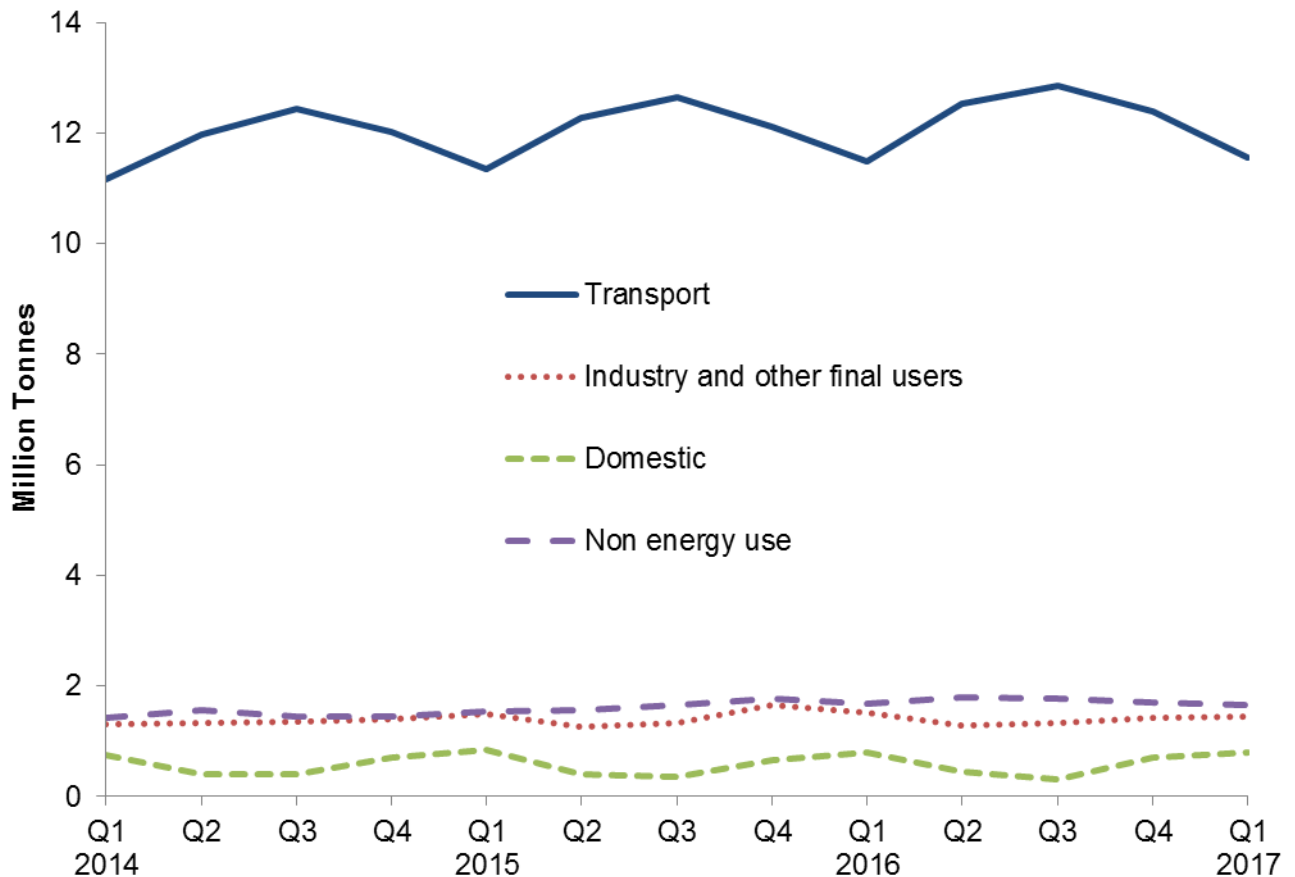
Chart 3.3 Overall trade in primary oils and petroleum products (Table 3.1)



Net imports of primary oils (crude, NGLs and feedstocks) increased from 1.4 million tonnes in Q1 2016 to 2.6 million tonnes in Q1 2017, an increase of 87 per cent. Decreased indigenous production of crude oil has meant higher imports in Q1 2017, with refineries using more imported and process oils.

The UK's overall net import dependence for primary oils (crude, NGLs and feedstocks) was 10 per cent in Q1 2017, up from 2.7 per cent in Q1 2016.

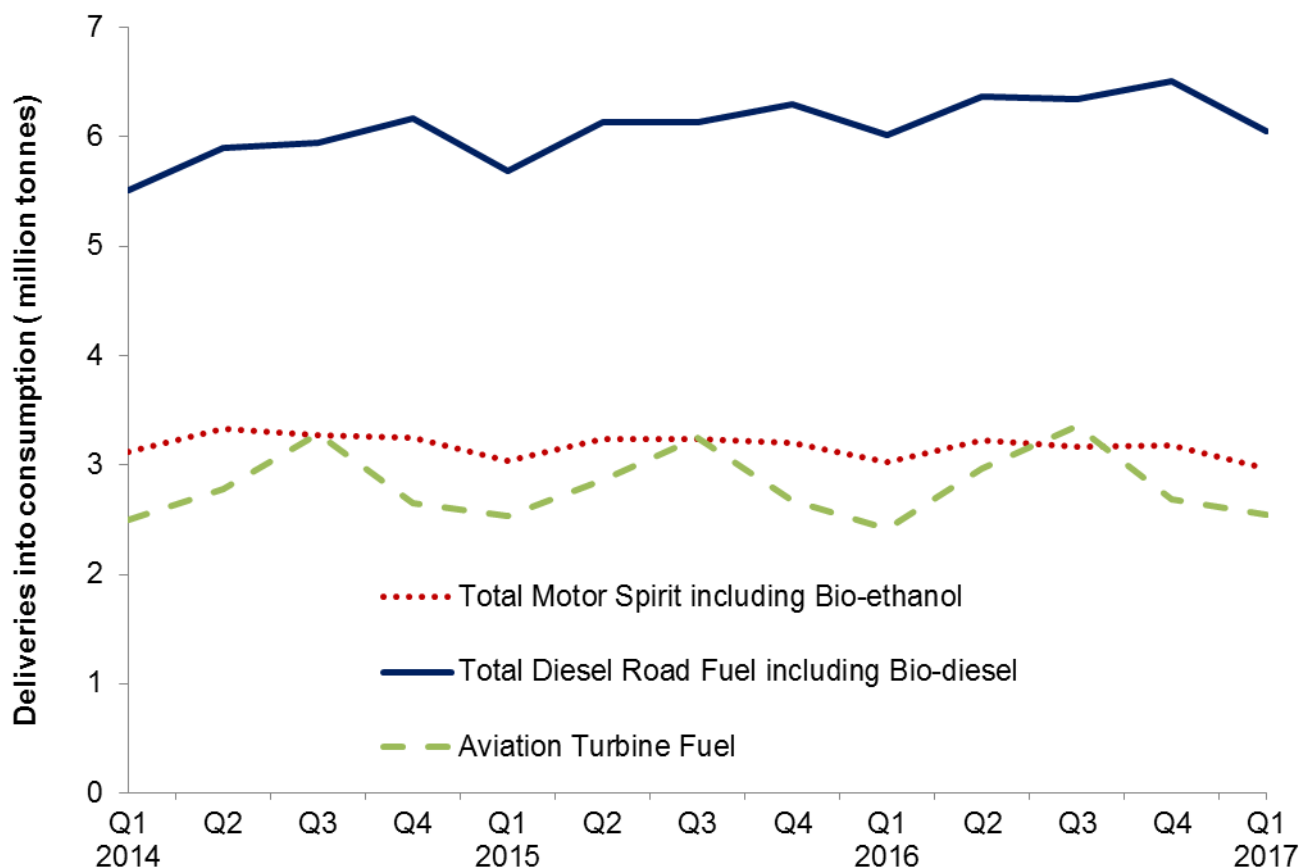
In Q1 2017 the UK was a net importer of petroleum products, by 2.5 million tonnes, down from 2.8 million tonnes in the first quarter of 2016.

Chart 3.4 Final consumption of oil ([Table 3.4](#))

In quarter 1 2017, final consumption of petroleum products was down 0.1 per cent, the first quarter to show a reduction following 10 consecutive quarters of increases in demand. Increases in consumption have largely been driven by key transport fuels, and in Q1 2017 demand for diesel increased just 0.5 per cent and motor spirit was down 2.4 per cent, following a period of robust demand likely driven by the comparatively low cost of road fuel in recent quarters. There was an increase in demand for aviation turbine fuel of 5.3 per cent.

Fuel use in the domestic sector was down by 2.5 per cent because this has been a warmer period compared to this time last year. Non-energy use was stable compared to Q1 2016 (down 1.2 per cent) following the recent period of growth in this sector.

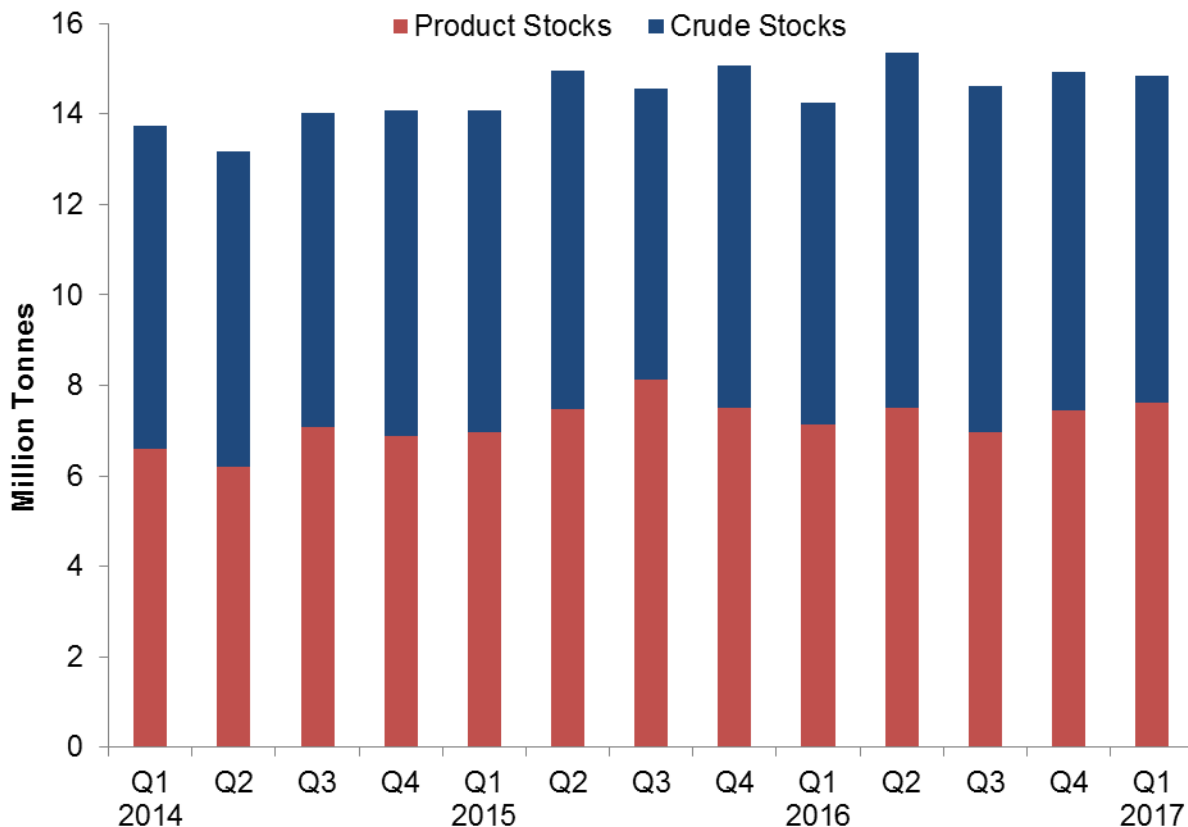
Chart 3.5 Demand for key transport fuels (Table 3.4 and Table 3.5)



Demand for all transport fuels stayed broadly the same in quarter 1 2017 as it was in early 2016. In Q1 2017, total deliveries of the three key transport fuels were higher by 0.5 per cent. Within this:

Motor spirit (petrol, including the bio-element) deliveries were down by 1.8 per cent on the first quarter of 2016. This follows the downward trend in motor spirit deliveries as we see more motorists switch to road diesel. Demand for DERV (road diesel, including the bio-element) increased by 0.6 per cent compared to Q1 2016.

Demand for aviation fuels was lower than in the previous three quarters in line with seasonal patterns. However, demand was up on the same quarter of 2016 by 5.3 per cent.

Chart 3.6 UK oil stocks (Table 3.6)

At the end of Q1 2017 total stocks of crude and products were up by 4.1 per cent compared to Q1 2016, and both physical stocks and net bilaterals had increased. Stocks of crude and feedstocks increased by 1.4 per cent and stocks of products increased by 6.8 per cent.

An increase in stocks of crude and process oils being held offshore offset volumes no longer being held at terminals, while volumes held at refineries increased by 1.6 per cent.

The most notable increases in stocks of products were in motor spirit and gas/diesel oil, at 11.8 per cent and 11.3 per cent respectively. Product stocks held abroad for the UK under bilateral agreements were up by 7.5 per cent as companies seek to maximise efficiency.

Chart 3.6 shows crude and product stocks held for the UK. At the end of Q1 2017, UK companies held stocks equal to around 61 days of consumption.

Further information on how the UK meets its oil stocking obligations are set out at: www.gov.uk/government/publications/uk-emergency-oil-stocking-international-obligations

3 OIL AND OIL PRODUCTS

Table 3.1 Supply and use of crude oil, natural gas liquids and feedstocks¹

Thousand tonnes

	2015	2016 p	per cent change	2015 1st quarter	2015 2nd quarter	2015 3rd quarter	2015 4th quarter	2016 1st quarter	2016 2nd quarter	2016 3rd quarter	2016 4th quarter	2017 1st quarter p	per cent change ⁸
SUPPLY													
Indigenous production ²	45,698	47,872r	+4.8r	10,836	12,141	10,515	12,206	12,716	12,210	11,377	11,570r	12,130	-4.6
Crude oil	42,826	44,306r	+3.5r	10,163	11,364	9,895	11,404	11,816	11,347	10,560	10,583r	11,103	-6.0
NGLs ³	2,462	3,139r	+27.5r	577	689	508	688	784	757	717	881r	911	+16.2
Feedstocks	410	428	+4.2	96	88	112	114	116	105	100	106	116	-0.3
Imports ⁴	50,604r	48,708r	-3.7r	12,037r	12,035r	12,979r	13,553r	11,480r	11,785r	12,305	13,138r	12,432	+8.3
Crude oil & NGLs	45,286r	42,415r	-6.3r	10,952r	10,931	11,396	12,006r	9,842	10,171	10,681	11,721r	10,989	+11.7
Feedstocks	5,318r	6,293r	+18.3r	1,085r	1,104r	1,583r	1,547	1,638r	1,614r	1,624	1,417	1,443	-11.9
Exports ⁴	33,709r	34,856r	+3.4r	8,096r	9,309r	7,908	8,396r	10,090r	7,976r	8,225	8,565r	9,834	-2.5
Crude Oil & NGLs	31,820r	33,247r	+4.5r	7,612r	8,846	7,279	8,083r	9,460	7,544	7,931	8,312r	9,481	+0.2
Feedstocks	1,890r	1,609r	-14.8r	484r	463r	630	313	630r	433r	294	253r	353	-43.9
Stock change ⁵	-98r	-125r	+27.2	-59	-384	970	-626r	355	-492	95	-83r	408	+14.9
Transfers ⁶	-1,152	-1,282r	+11.3r	-100	-382	-225	-445	-225	-368	-209	-481r	-493	(+)
Total supply	61,343r	60,317r	-1.7	14,618r	14,101r	16,331r	16,292	14,236r	15,159r	15,343	15,579r	14,643	+2.9
Statistical difference ⁷	-48r	-45r		-15r	-2r	-16r	-16	+14r	-81r	+4.3r	+17.1r	-11	
Total demand	61,391r	60,362r	-1.7	14,633r	14,103	16,347r	16,308	14,221r	15,240r	15,339r	15,562	14,653	+3.0
TRANSFORMATION	61,391r	60,362r	-1.7	14,633r	14,103	16,347r	16,308	14,221r	15,240r	15,339r	15,562	14,653	+3.0
Petroleum refineries	61,391r	60,362r	-1.7	14,633r	14,103	16,347r	16,308	14,221r	15,240r	15,339r	15,562	14,653	+3.0

1. As there is no use made of primary oils and feedstocks by industries other than the oil and gas extraction and petroleum refining industries, other industry headings have not been included in this table. As such, this table is a summary of the activity of what is known as the Upstream oil industry.

2. Includes offshore and onshore production.

3. Natural Gas Liquids (NGLs) are condensate and petroleum gases derived at onshore treatment plants.

4. Foreign trade as recorded by the Petroleum Industry which may differ from the figures published by HM Revenue and Customs in the Overseas Trade Statistics. Data are subject to further revision as revised information on imports and exports becomes available.

5. Stock fall (+), stock rise (-). Stocks include stocks held at refineries, at oil terminals and also those held in tanks and partially loaded vessels at offshore facilities.

6. Mostly direct disposals to petrochemical plants.

7. Total supply minus total demand.

8. Percentage change between the most recent quarter and the same quarter a year earlier.

3 OIL AND OIL PRODUCTS

Table 3.2 Supply and use of petroleum products

Thousand tonnes

	2015	2015	per cent	2015	2015	2015	2015	2016	2016	2016	2016	2017	per cent
	2015	2016 p	change	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	per cent
				quarter	quarter	quarter	quarter	quarter	quarter	quarter	quarter	quarter p	change ¹
SUPPLY													
Indigenous production ²	63,282r	62,455r	-1.3r	15,106r	14,628r	16,713r	16,835r	14,819r	15,790r	15,689r	16,156r	15,263	+3.0
Imports ³	32,133r	34,854r	+8.5r	7,712r	8,457r	8,024r	7,940r	8,814r	9,098r	8,539r	8,403r	8,170	-7.3
Exports ³	22,926r	24,312r	+6.0r	5,038r	5,212r	6,260r	6,416r	5,964r	6,245r	6,179r	5,923r	5,687	-4.7
Marine bunkers	2,509r	2,659r	+6.0r	551r	698r	687r	573r	538	727	763	632r	510	-5.3
Stock change ⁴	-743	+89r		-142	-266	-267	-68	148r	-278	460	-241	-301	
Transfers ⁵	-1,190	-1,268r		-530	-249	-227	-184	-474	-300	-281	-212r	-256	
Total supply	68,046r	69,158r	+1.6r	16,556r	16,660r	17,296r	17,534r	16,805r	17,337r	17,465r	17,552r	16,679	-0.7
Statistical difference ⁶	-51r	+30r		66r	-25r	-62r	-30r	32r	-2r	-7r	8r	-49	
Total demand	68,097r	69,128r	+1.5r	16,490r	16,685r	17,358r	17,564r	16,773r	17,339r	17,472r	17,544r	16,728	-0.3
TRANSFORMATION													
Electricity generation	1,125r	1,094r	-2.7r	262r	256r	293r	314r	302r	254r	250r	288r	272	-9.9
Heat generation	560r	501r	-10.5r	132r	128r	142r	158r	146r	110r	115r	130r	118	-19.1
Other Transformation	59	58r	-0.7r	15	15	15	15	15r	14r	14r	15	15	-
Other Transformation	506	535r	+5.7r	115	113	136	142	142	130	121r	143r	139	-1.9
Energy industry use													
Petroleum Refineries	4,043r	3,946r	-2.4r	983r	924r	1,089r	1,047r	988r	1,019r	949r	990r	991	+0.2
Petroleum Refineries	3,344r	3,284r	-1.8r	808r	750r	915r	872r	823r	854r	783	824r	825	+0.3
Blast Furnaces	-	-										-	
Others	699	662r	-5.3r	175	175	175	175	166r	166r	166r	166r	166	-
FINAL CONSUMPTION													
Iron & steel	62,929r	64,088r	+1.8r	15,245r	15,505r	15,976r	16,203r	15,482r	16,066r	16,273r	16,266r	15,466	-0.1
Iron & steel	6	4r	-29.9r	1	1r	2r	2r	3r	1r	0	0	3	+7.3
Other industries	3,939r	3,722r	-5.5r	1,051r	821r	858r	1,208r	1,095r	821r	842r	964r	1,073	-1.9
Transport	48,374r	49,292r	+1.9r	11,356r	12,265r	12,638r	12,115r	11,495r	12,531r	12,867r	12,400r	11,549	+0.5
Domestic	2,273r	2,275r	+0.1r	845r	414r	363	652r	799r	447r	313r	716r	779	-2.5
Other final users	1,813r	1,840r	+1.5r	443r	449r	467r	454r	410r	473r	485r	473r	401	-2.2
Non energy use	6,525r	6,954r	+6.6r	1,548r	1,556r	1,648r	1,773r	1,681r	1,794r	1,766r	1,714r	1,661	-1.2

1. Percentage change between the most recent quarter and the same quarter a year earlier; (+) represents a positive percentage change greater than 100%.
2. Includes refinery production and petroleum gases extracted as products during the production of oil and gas.
3. Foreign trade as recorded by the Petroleum Industry which may differ from the figures published by HM Revenue and Customs in the Overseas Trade Statistics. Data are subject for further revision as revised information on imports and exports becomes available.
4. Stock fall (+), stock rise (-).
5. Mainly transfers from product to feedstock.
6. Total supply minus total demand.

3 OIL AND OIL PRODUCTS

Table 3.4 Supply and use of petroleum products - latest quarter

Thousand tonnes

	2016 1st quarter									2017 1st quarter p								
	Total Petroleum Products	Motor spirit	DERV ⁹	Gas oil ¹	Aviation turbine fuel	Fuel oils	Petroleum gases ²	Burning oil	Other products ³	Total Petroleum Products	Motor spirit	DERV ⁹	Gas oil ¹	Aviation turbine fuel	Fuel oils	Petroleum gases ²	Burning oil	Other products ³
SUPPLY																		
Indigenous Production ⁷	14,819r	4,111	2,932	1,720	915	1,114	1,703r	671	1,653	15,263	4,378	3,160	1,668	1,016	1,027	1,738	671	1,606
Imports ⁹	8,814	979	3,560	507	2,084	283	195	359	846	8,170	827	3,321	183	2,293	296	221	246	782
Exports ⁹	5,964	2,707	559	621	307	907	182	73	609	5,687	2,708	476	533	268	795	231	31	644
Marine bunkers	538	-	-	345	-	193	0	-	-	510	-	-	328	-	182	-	-	-
Stock change ⁶	+148	-0	+56	+43	-57	+51	-12	+26	+41	-301	-133	+87	-21	-240	-10	-21	+8	+30
Transfers ⁷	-474	+515	-72	-200	-218	-139	-	+210	-570	-256	+462	-152	+92	-239	-148	-22	+230	-479
Total supply	16,805r	2,898	5,918	1,104	2,418	209	1,704r	1,194	1,361	16,679	2,825	5,940	1,062	2,562	187	1,685	1,124	1,294
Statistical difference ⁸	+32	+21	-	+9	+2	-2	-34	+13	+23	-49	+17	-	-4	+18	-8	-48	-15	-9
Total demand	16,773r	2,877	5,889	1,095	2,416	211	1,738r	1,181	1,366	16,728	2,808	5,921	1,066	2,543	195	1,734	1,139	1,323
TRANSFORMATION	302	-	-	25	-	70	181	-	26	272	-	-	25	-	42	176	-	28
Electricity generation	146	-	-	24	-	59	63	-	-	118	-	-	24	-	31	63	-	-
Heat generation	15	-	-	1	-	11	2	-	-	15	-	-	1	-	11	2	-	-
Petroleum refineries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Coke manufacture	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blast furnaces	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Patent fuel manufacture	22	-	-	-	-	-	0	-	22	21	-	-	-	-	-	0	-	21
Other transformation ⁹	120	-	-	-	-	-	116	-	4	118	-	-	-	-	-	111	-	7
Energy industry use	988	-	-	150	-	80	470	-	289	991	-	-	150	-	59	472	-	310
FINAL CONSUMPTION	15,482	2,877	5,889	920	2,416	61	1,087	1,181	1,051	15,466	2,808	5,921	891	2,543	94	1,086	1,139	984
Iron & steel	3	-	-	-	-	3	0	-	-	3	-	-	-	-	3	-	-	-
Other industries	1,095r	-	-	326	-	37	106r	489	137	1,073	-	-	334	-	81	101	459	98
Transport	11,495	2,877	5,889	292	2,416	0	19	-	2	11,549	2,808	5,921	270	2,543	1	4	-	2
Domestic	799	-	-	29	-	-	78	692	-	779	-	-	25	-	-	74	680	-
Other final users	410r	-	-	270	-	21	119r	-	-	401	-	-	258	-	9	133	-	-
Non energy use	1,681	-	-	4	-	-	766	-	912	1,661	-	-	3	-	-	774	-	884

1. Includes middle distillate feedstock destined for use in the petrochemical industry and marine diesel

2. Includes ethane, propane, butane and other petroleum gases

3. Includes naphtha, industrial and white spirits, lubricants, bitumen, petroleum waxes, petroleum coke and other oil product:

4. Includes refinery production and petroleum gases extracted as products during the production of oil and gas:

5. Foreign trade as recorded by the Petroleum Industry which may differ from the figures published by HM Revenue and Customs in the Overseas Trade Statistic:

Data are subject to further revision as revised information on imports and exports becomes available

6. Stock fall (+), stock rise (-).

7. Mainly transfers from product to feedstock.

8. Total supply minus total demand.

9. Backflows from petrochemical companies have been placed on a separate row for the first time June 2016. Please see article in Energy Trend June 2016 for more information

3 OIL AND OIL PRODUCTS

Table 3.5 Biofuel sales and sales through supermarkets¹

Thousand tonnes

	2015	2016 p	per cent change	2015 1st quarter	2015 2nd quarter	2015 3rd quarter	2015 4th quarter	2016 1st quarter	2016 2nd quarter	2016 3rd quarter	2016 4th quarter	2017 1st quarter p	per cent change ²
MOTOR SPIRIT													
of which, Hydrocarbon ³	12,082	11,951r	-1.1%	2,893	3,076	3,072	3,040	2,877	3,072	3,014	2,988r	2,808	-2.4%
of which, Bio-ethanol ⁴	631	603r	-4.5%	150	161	163	157	146	154	150	152r	160	9.8%
Total Motor Spirit including Bio-ethanol	12,713	12,554r	-1.3%	3,043	3,237	3,235	3,197	3,023	3,226	3,164	3,140r	2,968	-1.8%
of which, sold through Supermarkets ⁵	5,794	5,885	1.6%	1,418	1,467	1,435	1,473	1,480	1,479	1,453	1,473	1,388	-6.2%
DIESEL ROAD FUEL													
of which, Hydrocarbon ³	23,656	24,648r	4.2%	5,575	5,998	5,976	6,106	5,889	6,173	6,167	6,419r	5,921	0.5%
of which, Bio-diesel ⁴	595	630r	5.8%	111	135	158	191	127	195	174	133r	131	2.8%
Total Diesel Road Fuel including Bio-diesel	24,251	25,279r	4.2%	5,687	6,133	6,134	6,298	6,016	6,368	6,342	6,552r	6,052	0.6%
of which, sold through Supermarkets ⁵	6,644	7,267	9.4%	1,605	1,648	1,706	1,685	1,793	1,802	1,814	1,858	1,761	-1.8%

1. Monthly data for inland deliveries of oil products are available - See BEIS website: <https://www.gov.uk/government/collections/oil-statistics>

2. Percentage change between the most recent quarter and the same quarter a year earlier.

3. Demand excluding bioethanol. Based on HMRC data.

4. Bioethanol based on HMRC data and excludes other renewables

5. Data for sales by supermarkets collected by a monthly reporting system. Includes Asda, Morrisons, Sainsburys and Tesco only.

3 OIL AND OIL PRODUCTS

Table 3.6 Stocks of petroleum¹ at end of period

Thousand tonnes

	Crude oil and refinery process oil					Petroleum products							Total stocks			
	Refineries ²	Terminals ³	Offshore ⁴	Net bilaterals of Crude and Process oil ⁵		Motor Spirit ⁶	Kerosene ⁷	Gas/Diesel Oil ⁸		Fuel oils	Other products ⁹	Net bilaterals of products ⁵		Total Net bilaterals ⁵	Total Stocks in UK ¹⁰	Total stocks
				Process oil ⁵	Total ⁵			Oil ⁸	Fuel oils			products ⁵	Total products			
2012	3,829	1,194	473	195	5,690	605	1,427	1,931	491	841	2,441	7,735	2,636	10,790	13,425	
2013	3,592	1,102	513	1,469	6,677	1,041	1,419	1,539	404	693	2,432	7,528	3,901	10,304	14,205	
2014	3,876	1,147	460	1,728	7,211	947	1,178	1,656	253	773	2,064	6,871	3,792	10,290	14,082	
2015	3,156	1,629	499	2,289	7,574	1,084	1,425	1,858	314	792	2,022	7,497	4,312	10,759	15,070	
2016 p	3,088	1,795	526r	2,006	7,415r	1,079	1,342	2,033	218	687	2,082	7,442	4,089	10,769r	14,857r	
2015 1st quarter	3,793	991	461	1,871	7,116	1,304	1,142	1,553	292	634	2,051	6,976	3,922	10,170	14,092	
2nd quarter	3,590	1,565	474	1,862	7,491	1,150	1,265	1,706	348	697	2,315	7,481	4,177	10,795	14,972	
3rd quarter	3,098	1,211	350	1,793	6,451	1,087	1,436	1,825	314	750	2,703	8,116	4,496	10,071	14,567	
4th quarter	3,156	1,629	499	2,289	7,574	1,084	1,425	1,858	314	792	2,022	7,497	4,312	10,759	15,070	
2016 1st quarter	3,081	1,370	478	2,193	7,122	1,085	1,456	1,767	247	763	1,812	7,130	4,005	10,247	14,253	
2nd quarter	3,201	1,586	635	2,427	7,849	1,158	1,398	1,990	270	780	1,899	7,495	4,326	11,018	15,344	
3rd quarter	3,238	1,473	615	2,323	7,650	1,107	1,241	1,809	261	718	1,826	6,964	4,150	10,464	14,614	
4th quarter	3,088	1,795	526r	2,006	7,415r	1,079	1,342	2,033	218	687	2,082	7,442	4,089	10,769r	14,857r	
2017 1st quarter p	3,131	1,307	557	2,229	7,224	1,212	1,575	1,968	236	678	1,949	7,618	4,178	10,664	14,842	
<i>Per cent change</i> ¹¹	+1.6	-4.6	+16.4	+1.6	+1.4	+11.8	+8.2	+11.3	-4.3	-11.2	+7.5	+6.8	+4.3	+4.1	+4.1	

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1. Stocks held at refineries, terminals and power stations. Stocks in the wholesale distribution system and certain stocks at offshore fields (UK Continental Shelf [UKCS]), and others held under approved bilateral agreements also included.

2. Stocks of crude oil, NGLs and process oil at UK refineries.

3. Stocks of crude oil and NGLs at UKCS pipeline terminals.

4. Stocks of crude oil in tanks and partially loaded tankers at offshore fields (UKCS).

5. The difference between stocks held abroad for UK use under approved bilateral agreements and the equivalent stocks held in the UK for foreign use. From 2013 onwards, EU Directive 2009/119/EC came into effect and this has led to changes in how UK companies manage their stock-holding. The increase in crude stocks held abroad was at the expense of a decrease in product stocks held under similar agreements.

6. Motor spirit and aviation spirit.

7. Aviation turbine fuel and burning oil.

8. Gas oil, DERV fuel, middle distillate feedstock (mdf) and marine diesel oil.

9. Ethane, propane, butane, other petroleum gases, naphtha (ldf), industrial and white spirits, bitumen, petroleum wax, lubricating oil, petroleum coke, and miscellaneous products.

10. Stocks held in the national territory or elsewhere on the UKCS

11. Percentage change between the most recent quarter and the same quarter a year earlier.

Section 4 - Gas

Key results show:

The most notable development this quarter related to trade. Whilst imports were up 3.6 per cent, exports fell by nearly a quarter to 15 TWh - the lowest quarterly figure since 2004 (**Chart 4.4**). The quarter also saw a sharp contraction in Liquefied Natural Gas (LNG) imports which was balanced by increased gas from Norway (**Chart 4.5**).

UK production of natural gas in Q1 2017 was 4.7 per cent higher in comparison to the same quarter of 2016, following the start-up of the Cygnus gas field in December 2016. Within this, production of associated gas was 8.9 per cent higher whilst dry gas production was 2.6 per cent lower (**Chart 4.2**).

Demand for natural gas in Q1 2017 fell by 0.7 per cent compared to last year to 291 TWh, the first decrease since Q4 2015. (**Chart 4.6**)

Growth in demand for electricity generation has continued because of the ongoing reduction of coal generation capacity, although it slowed this quarter. Compared to growth rates of 40 per cent seen in 2016, it was 10.3 per cent in Q1 2017. (**Chart 4.6**)

In contrast final consumption was down 4.2 per cent, with domestic use and other final users down 5.9 and 3.1 per cent respectively, driven by warmer weather in Q1 2017 compared to Q1 2016. (**Chart 4.6**)

Gross gas production and imports have been revised from 2008 onwards following new data submitted by industry. As a result, some gas previously categorised as arising from indigenous production on the UKCS has been reallocated to Norwegian imports. The revisions affect data back to 2008 and reduces UK production by 2 to 3 per cent. For further information please see the article Enhancements to Energy Trends gas tables at:

www.gov.uk/government/collections/gas-statistics#energy-trends-articles

Gas consumption has been revised from 2008 onwards following review. Revisions made have been based upon the correction on some misreporting, and use of data sources such as the Purchasers Inquiry and ONS Index of Services and Production data to help evaluate changes over time. These revisions affect data back to 2008 and reduce other final users' figures, whilst increasing other industries. All other revisions this month are relatively small and due to providers restating figures or new data replacing estimates.

Relevant table

4.1: Natural gas supply and consumption

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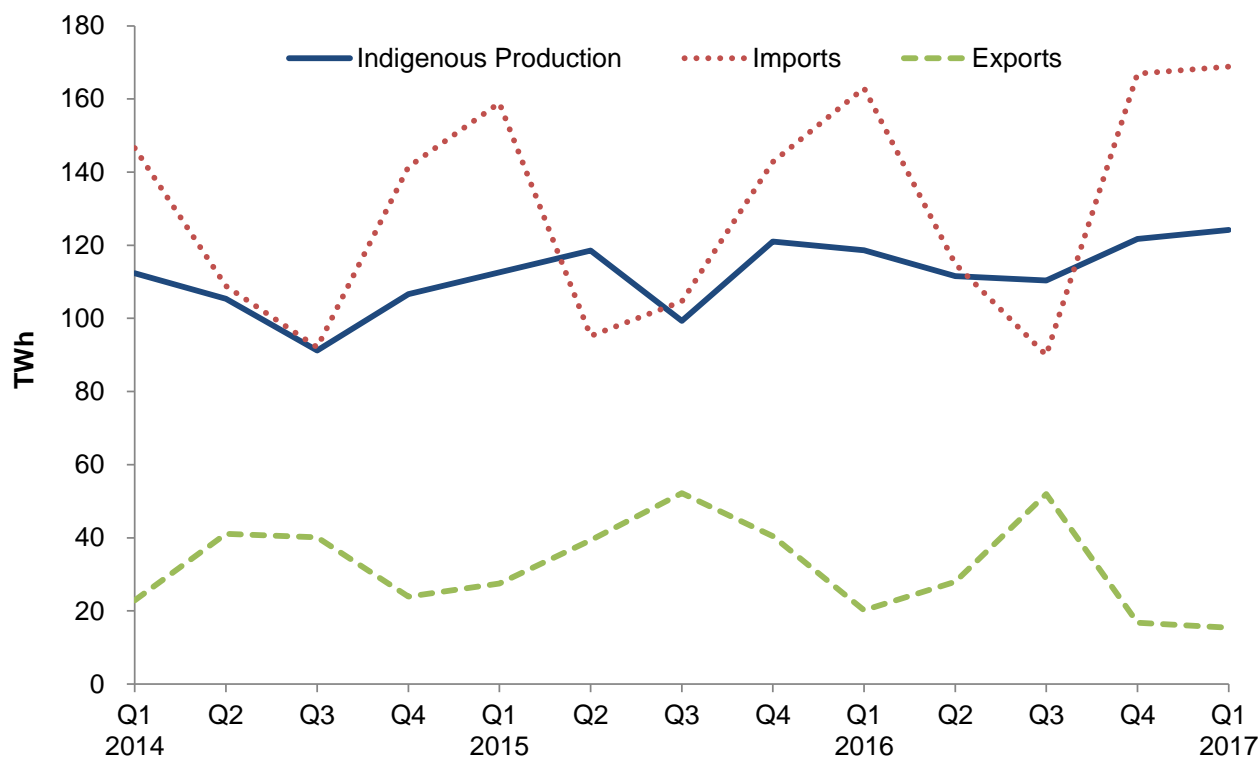
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Gas

Chart 4.1 Production and imports and exports of natural gas (Table 4.1)



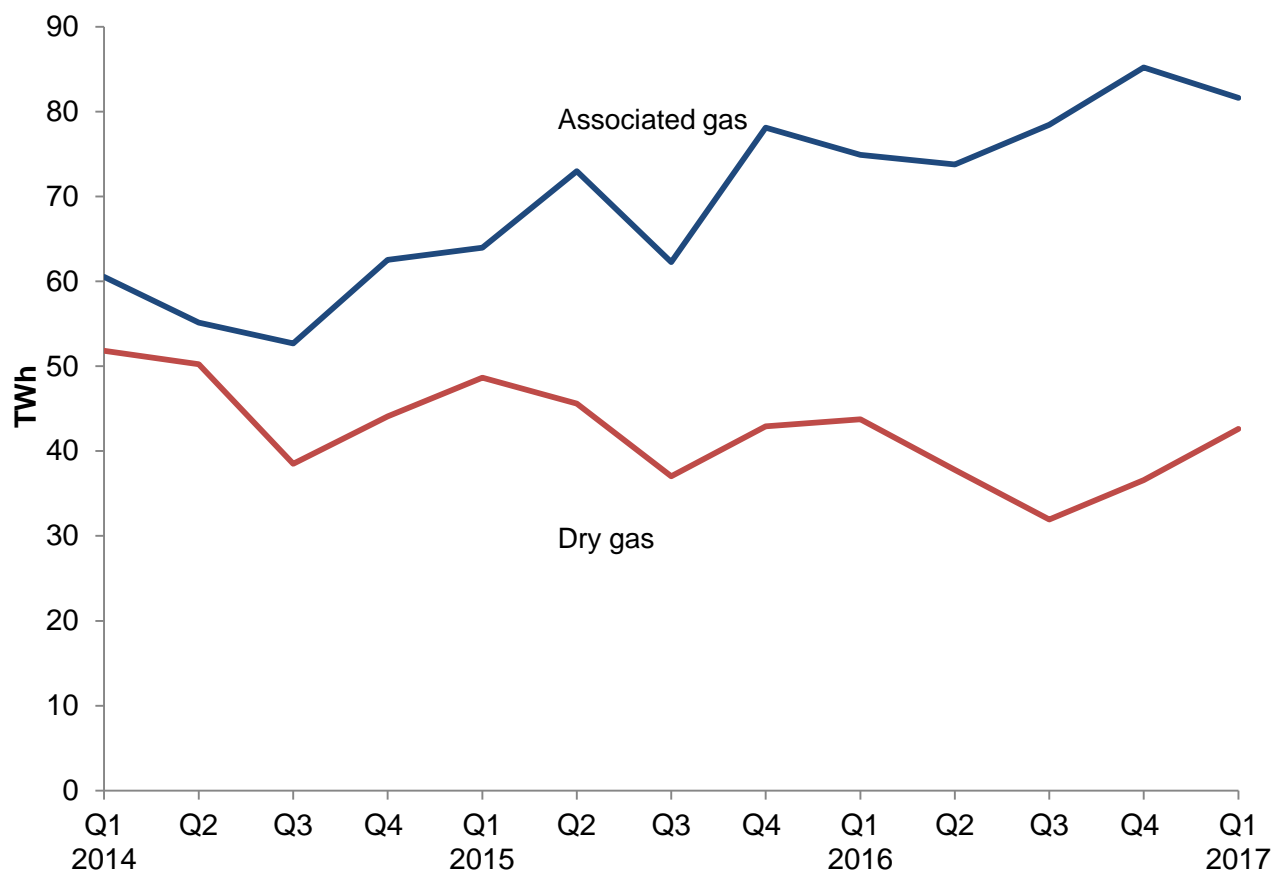
Gross production of natural gas was up by 4.7 per cent in Q1 2017, in line with recent upward trends but still at around a third of peak production levels seen in Q1 2000. The increase this quarter is due in part to the start-up of the Cygnus gas field in December 2016, alongside continued strong production across much of the UK's Continental Shelf.

The UK imports natural gas primarily from Norway (predominantly via the Langeled, Tampen Link and Gjoa/Vega pipelines). Smaller volumes are imported from Belgium (via the UK-Belgium Interconnector) and the Netherlands (via the Balgzand to Bacton line). See Map 4.1 for an illustration of trade flows.

Imports in Q1 2017 were up 3.6 per cent on the same quarter in 2016, and were driven by a 23 per cent increase in imports from Norway.

The UK exports natural gas primarily to Belgium (60 per cent of total exports in 2016) and Ireland (20 per cent of total exports in 2016). Exports decreased in Q1 2017 by nearly a quarter to reach the lowest level seen since 2004.

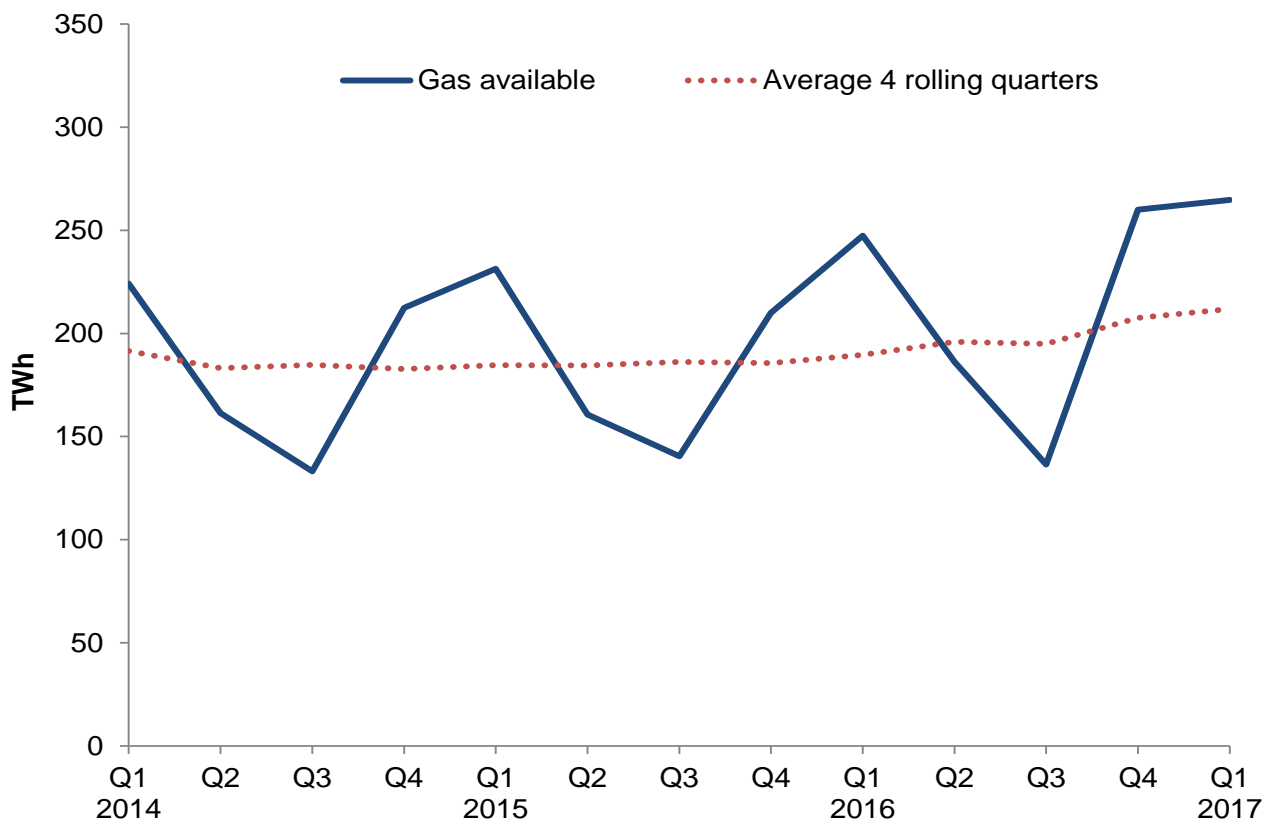
The decrease was driven by 40 per cent drops in gas sent to Ireland and Belgium compared to this time last year. In part this was due to higher production levels at the Corrib field now supplying Ireland, but also because injections of gas into the Rough Storage Facility have been suspended in recent months meaning less is available to be drawn from stock.

Chart 4.2 Production of dry gas and associated gas (not shown in published tables)

Production of associated gas (natural gas produced from oil fields) in Q1 2017 was up 8.9 per cent compared to the same quarter last year, from 75 to 81 TWh. This increase partly reflects the steady production of a number of relatively new condensate fields in the North Sea. In comparison dry gas production (natural gas composed mainly of methane) fell by 2.6 per cent in Q1 2017 on last year.

Gas

Chart 4.3 Gas availability ([Table 4.2](#))

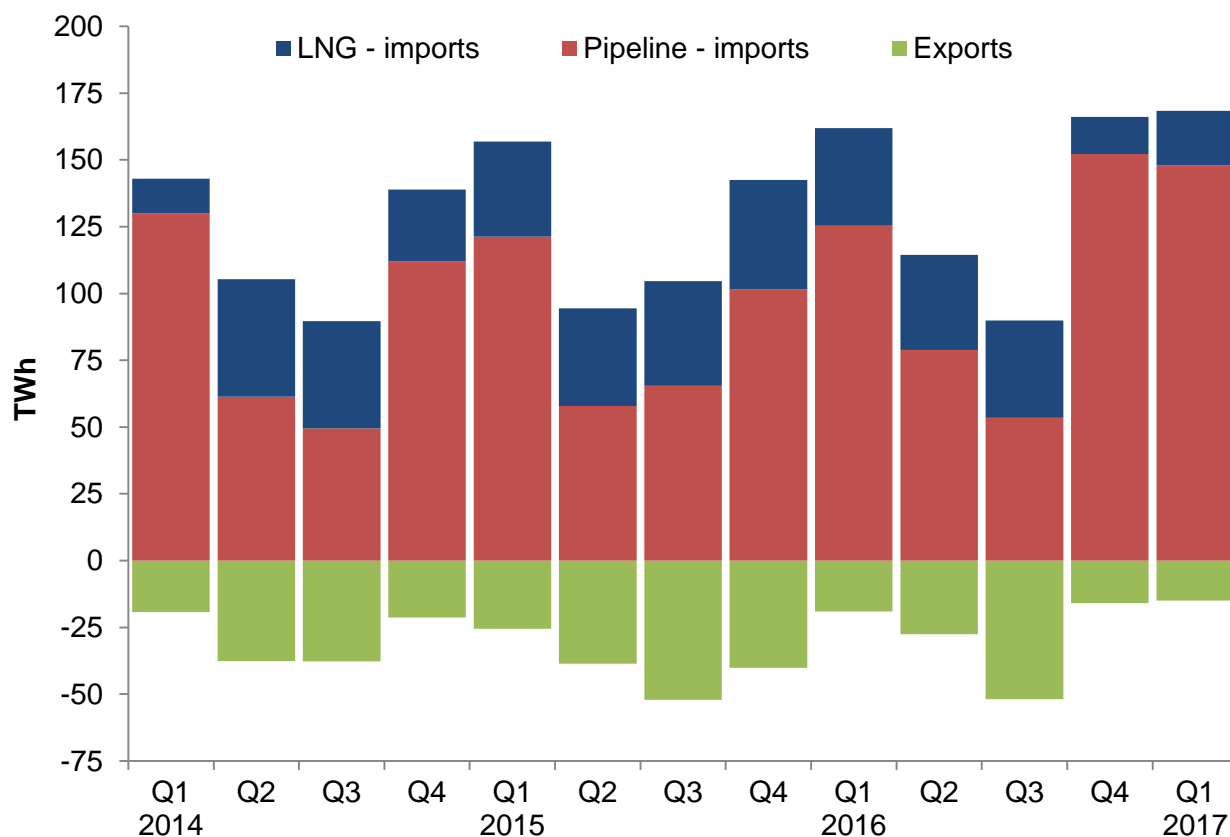


Gas available at terminals is roughly equal to gross gas production minus producers own use, plus net imports.

Gas availability is seasonal, mirroring gas demand, and peaks during Q1 and Q4 each year. Gas availability in Q1 2017 increased by 7.1 per cent compared to Q1 2016 to 265 TWh, and was driven by increases in net imports and UK production.

The long-term picture shows that the average availability over four rolling quarters had remained fairly constant since the start of 2012 before increasing slightly since the start of 2015.

Chart 4.4 Import and exports (Table 4.3 and Table 4.4)



Net Imports during Q1 2017 were up by 7.4 per cent in comparison to the same quarter in 2016. This increase has been driven by the lower export figure, a result of a significantly lower stock draw linked to the continued suspension of gas injections into the Rough Storage Facility.

As noted in Chart 4.1, the UK imports natural gas primarily from Norway (predominantly via the Langeled, Tampen Link and Gjoa/Vega pipelines). Smaller volumes are imported from Belgium (via the UK-Belgium Interconnector) and the Netherlands (via the Balgzand to Bacton line).

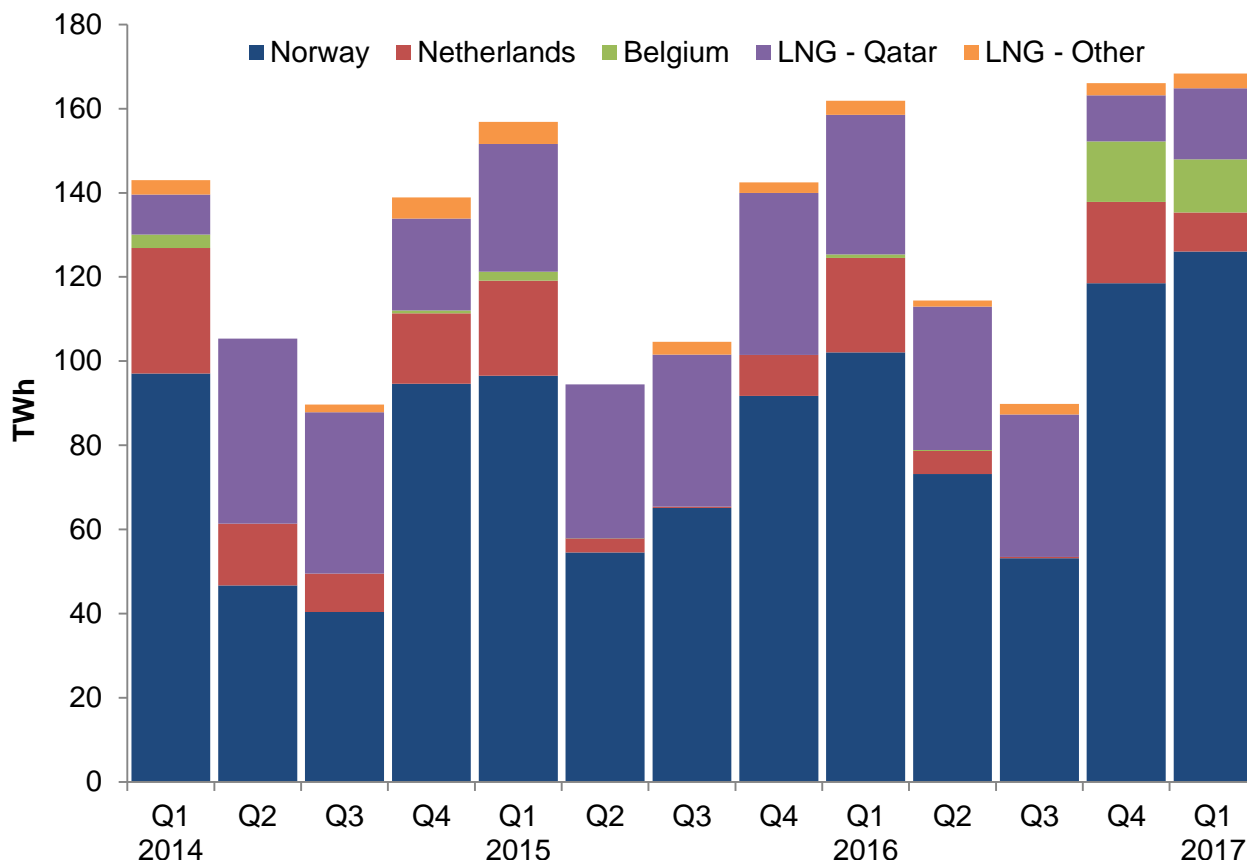
Pipeline imports were up by nearly one-fifth, with imports from Norway up 23 per cent and imports from Belgium increasing to 13 TWh from 1 TWh, driving an overall 3.6 per cent increase in imports. In contrast imports of LNG have decreased by 44 per cent, meaning LNG only accounted for 12 per cent of total imports compared to twice that figure in the same quarter last year.

Exports decreased by a quarter over the same timeframe driven by a 41 per cent decrease in exports to the Republic of Ireland, which is largely due to the production from the Corrib gas field now supplying Ireland and a 38 per cent decrease in exports to Belgium.

Liquefied Natural Gas 'reloads' started in late 2014 and have continued since with the UK exporting to countries including Brazil, Pakistan and the United Arab Emirates.

Gas

Chart 4.5 Imports by origin ([Table 4.4](#))

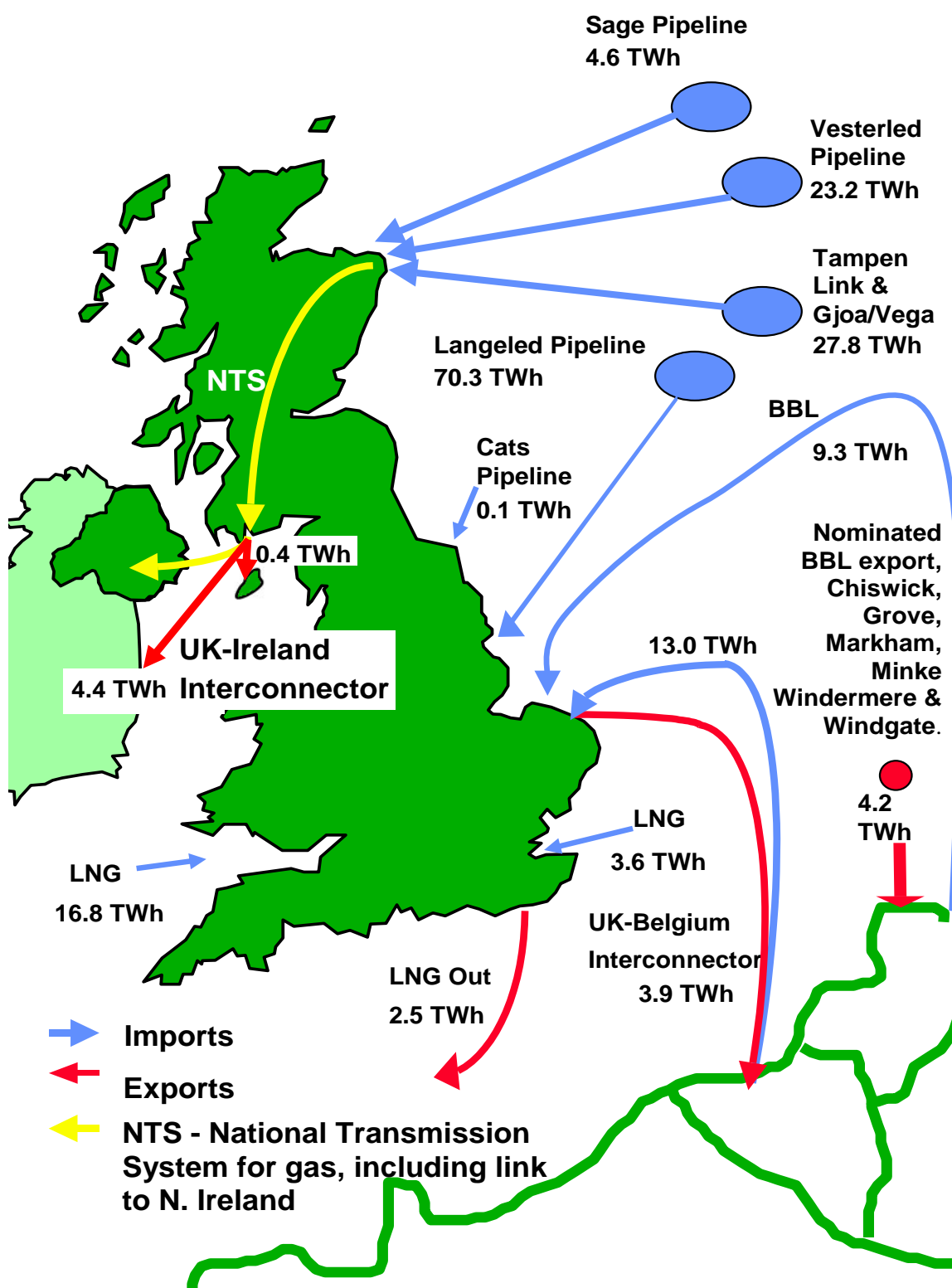


In Q1 2017 the main development is the contraction in the amount of LNG imported into the UK, with LNG's share of total imports decreasing from 23 per cent in Q1 2016 to 13 per cent in Q1 2017. The majority of LNG imports are sourced from Qatar (around 83 per cent of total LNG imports in Q1 2017), and these volumes fell by nearly half in comparison to the same period last year to 20 TWh. The decrease was driven by high demand in Northeast Asia for Qatar gas following the temporary shutdown of a number of nuclear facilities across the region coinciding with the start of the peak winter demand. This has increased LNG prices in the Asia market and consequently diverted supply from the European market

In contrast pipeline imports have increased, up nearly one-fifth on Q1 2016. Norway remains the principal source of UK gas imports (at three-quarters of total imports in Q1 2017 compared to half in 2010) and has seen a 23 per cent increase in comparison to Q1 2016, with imports from Belgium also increasing from around 1 TWh to 13 TWh. During the same timeframe imports from the Netherlands dropped by more than half to 9 TWh, the lowest levels of imports from the Netherlands in Q1 since 2006.

A complete country breakdown for physical pipeline and LNG imports is provided in Energy Trends Table 4.4 - *Supplementary information on the origin of UK gas imports*.

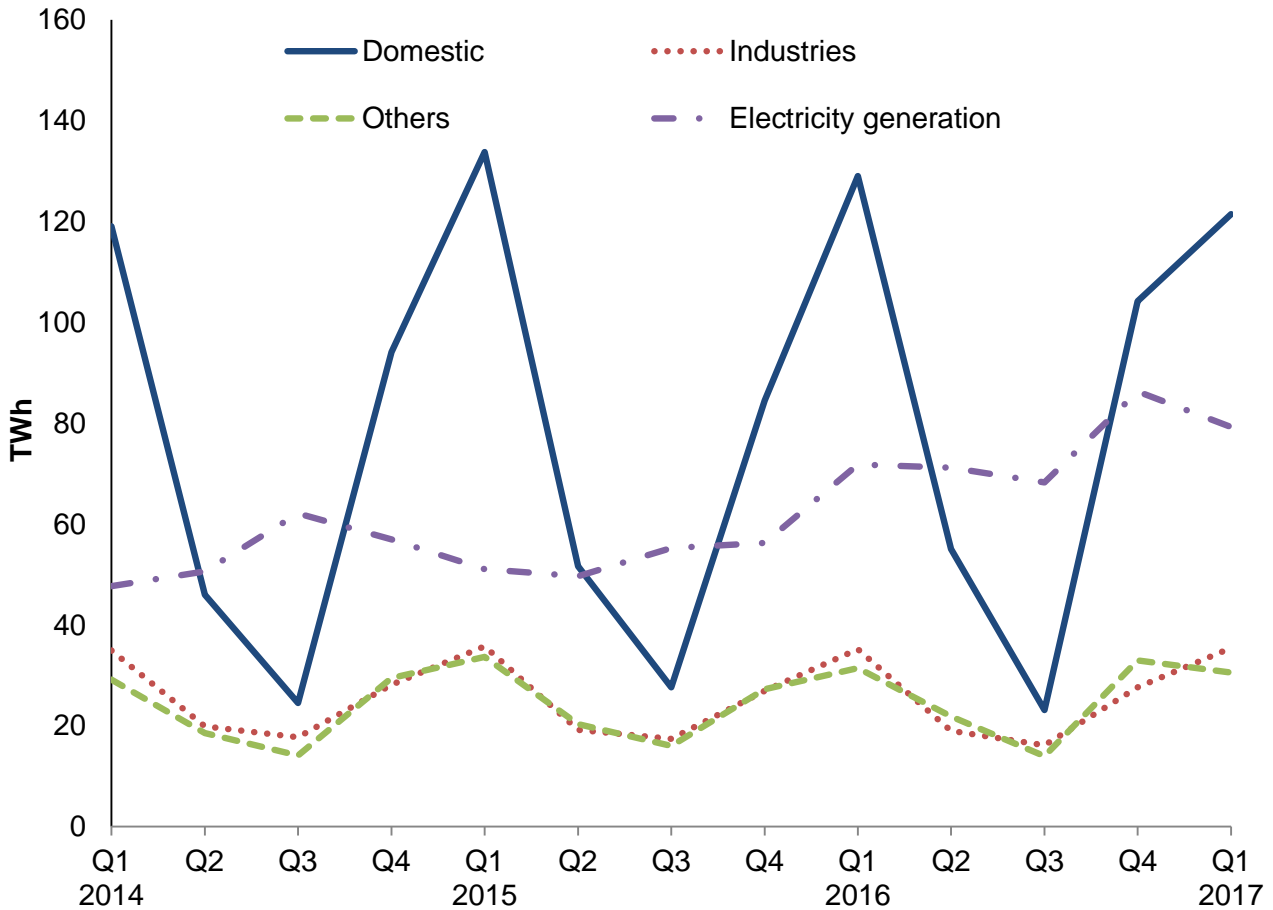
Map 4.1: UK imports and exports of gas Q1 2017*



*Please note that imports and exports in this map uses nominated flows through the UK-Belgium Interconnector and BBL pipeline as in Table 4.1. The figures here will differ from those in ET Table 4.3 which uses actual physical flows through the Interconnector.

Gas

Chart 4.6 UK demand for natural gas (Table 4.1)



UK demand for natural gas in Q1 2017 is down 0.7 per cent in comparison Q1 2016 to 291 TWh, the first fall since Q4 2015.

Growth in demand for electricity generation has continued because of the ongoing reduction of coal generation capacity, although it slowed this quarter. Compared to growth rates of 40 per cent seen in 2016, growth was just 10.3 per cent in Q1 2017.

In contrast final consumption was down 4.2 per cent, with domestic use and other final users down 5.9 and 3.1 per cent in order respectively, driven by the warmer weather in early 2017 compared to 2016.

4 GAS

Table 4.1. Natural gas supply and consumption

	GWh												
	2015	2016 p	per cent change	2015 1st quarter	2015 2nd quarter	2015 3rd quarter	2015 4th quarter	2016 1st quarter	2016 2nd quarter	2016 3rd quarter	2016 4th quarter	2017 1st quarter p	per cent change ¹
SUPPLY													
Indigenous production	451,437r	462,307r	+2.4	112,572	118,539	99,296	121,031	118,637	111,542	110,387r	121,740r	124,213	+4.7
Imports	501,563r	534,740r	+6.6	158,922	95,206	104,648	142,788	162,960	114,908	89,950	166,923	168,807	+3.6
<i>of which LNG</i>	<i>152,406r</i>	<i>122,310r</i>	<i>-19.7</i>	<i>35,618</i>	<i>36,581</i>	<i>39,207</i>	<i>41,001</i>	<i>36,505</i>	<i>35,591</i>	<i>36,351</i>	<i>13,863</i>	<i>20,424</i>	<i>-44.1</i>
Exports	159,517r	116,862r	-26.7	27,518	39,356	52,184	40,459	20,163	27,979	51,985	16,735	15,416	-23.5
Stock change ²	+3,515r	+16,242r		34,500	-11,042	-15,919	-4,024	31,688	-9,551	-6,797	901	13,185	
Transfers	559r	1,575r		52	135	182	190	238	345	457	535	710	
Total supply	797,558r	898,002r	+12.6	278,528	163,481	136,023	219,526	293,361	189,265r	142,013r	273,363r	291,500	-0.6
Statistical difference	779r	1,476r		1	471	-135	443	626	859r	24r	-34r	801	
Total demand	796,779r	896,527r	+12.5	278,527	163,010	136,158	219,083	292,735	188,406r	141,988r	273,397r	290,699	-0.7
TRANSFORMATION													
Electricity generation	237,682r	323,763r	+36.2	59,195	55,292	60,220	62,975	79,870	77,013r	73,250r	93,629r	87,241	+9.2
Heat generation ³	25,393r	26,120r	+2.9	8,127	5,637	4,942	6,687	8,016	5,833	4,955	7,315	8,016	-
Energy industry use	58,645r	57,773r	-1.5	14,692	15,512	13,115	15,326	16,014	14,096r	13,913r	13,749r	14,966	-6.5
Losses	6,469r	5,396r	-16.6	1,438	1,115	1,833	2,082	1,154	1,393r	1,636r	1,212r	1,081	-6.4
FINAL CONSUMPTION													
Iron & steel	5,374	4,155r	-22.7	1,528	1,476	1,253	1,118	1,161	990	973	1,032	1,201	+3.5
Other industries	93,825r	93,842r	-	34,213	17,680	16,140	25,793	34,033	18,017r	15,166r	26,625r	34,217	+0.5
Domestic	297,582r	311,375r	+4.6	133,809	51,606	27,617	84,549	129,040	55,039r	23,098r	104,197r	121,472	-5.9
Other final users	91,935r	95,115r	+3.5	32,336	19,012	14,664	25,923	30,186	20,580r	12,674r	31,676r	29,244	-3.1
Non energy use ³	5,267	5,109r	-3.0	1,317	1,317	1,317	1,317	1,277r	1,277r	1,277r	1,277r	1,277	-

1. Percentage change between the most recent quarter and the same quarter a year earlier.

2. Stock change + = stock draw, - = stock build.

3. For heat generation and non energy use, the 2017 figures currently shown are the 2016 figures carried forward - these will be updated in June 2018.

Section 5 - Electricity

Key results show:

Electricity generation increased only marginally in 2017 Q1 (+1.0 per cent) from 92.3 TWh a year earlier to 93.2 TWh (**Chart 5.1**); however, due to a 3.1 TWh fall in net imports over the same period, total electricity supplied fell 2.2 per cent to 96.1 TWh.

There were substantial shifts in fuel mix over the period. Coal's share of generation decreased from 15.9 per cent to 11.3 per cent, whilst gas' share rose from 37.0 per cent in the first quarter of 2016 to 39.9 per cent in the first quarter of 2017. (**Chart 5.2**).

Renewables' share of electricity generation increased from 25.6 per cent in the first quarter of 2016 to 26.6 per cent in the first quarter of 2017. (**Chart 5.2**).

Low carbon electricity (renewables plus nuclear) generation share increased from 44.4 per cent in the first quarter of 2016 to 45.6 per cent in the first quarter of 2017. (**Chart 5.3**).

The UK remains a net importer with 3.0 per cent of electricity supplied from net imports in the first quarter of 2017. However, net imports were down 52 per cent from the first quarter of 2016 due to damage to the France-UK interconnector. (**Chart 5.4**).

Final consumption of electricity during the first quarter of 2017, at 80.7 TWh, was 2.3 per cent lower than in the same period last year. Domestic sales fell by 3.2 per cent. (**Chart 5.5**).

Relevant tables

5.1: Fuel used in electricity generation and electricity supplied

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5.2: Supply and consumption of electricity

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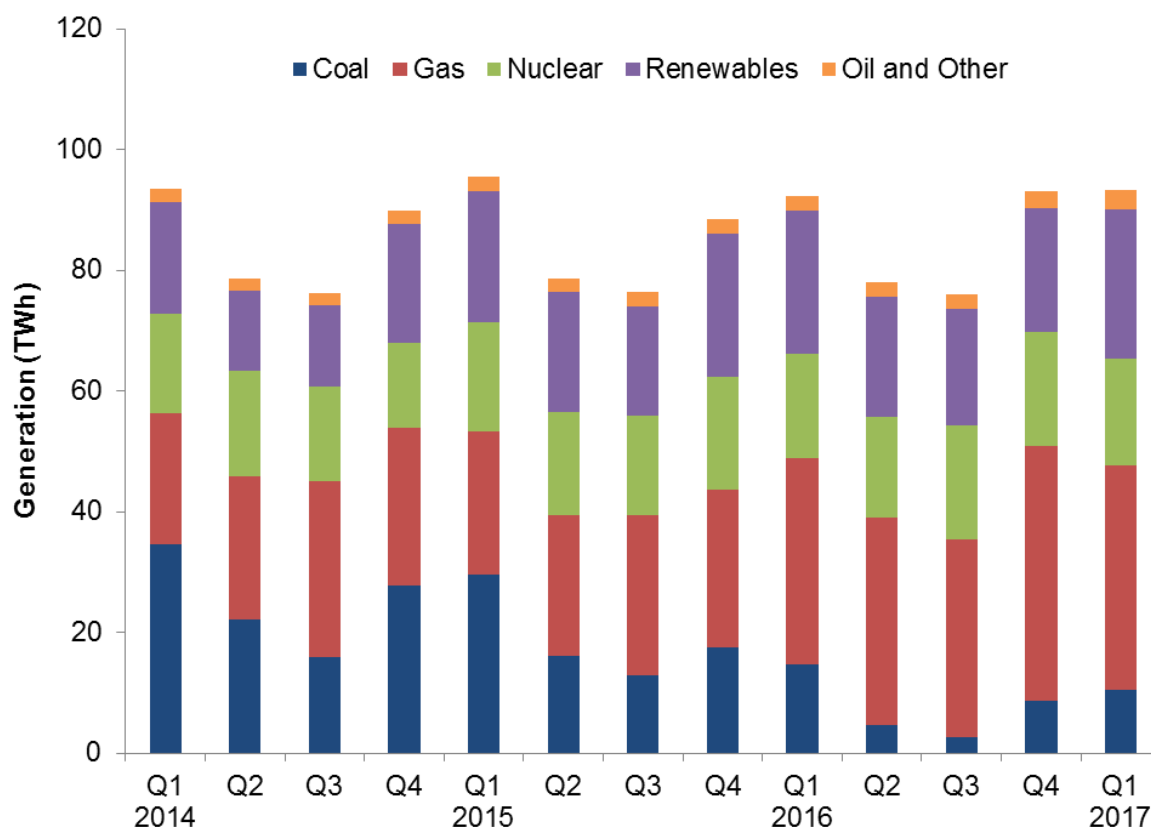
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Chart 5.1 Electricity generated by fuel type (Table 5.1)

In 2017 Q1, total electricity generated increased marginally by 1.0 per cent from 92.3 TWh in 2016 Q1 to 93.2 TWh. However, there have been substantial shifts in the generation mix.

Coal fired generation fell by 28 per cent from 14.7 TWh to a Q1 record low of 10.5 TWh due to plant closures and a market preference for gas generation. Whilst fuel costs for coal fired generation are lower than for gas, emissions from coal are higher so generators must pay a greater carbon price per GWh produced. The fall follows the general downward trend in coal fired generation over the last three years, despite the usual winter increase as the Supplemental Balancing Reserve stations came online to meet the increased seasonal demand. Between 2016 Q1 and 2017 Q1 gas fired generation rose 9.0 per cent from 34.1 TWh to 37.2 TWh as gas replaced coal.

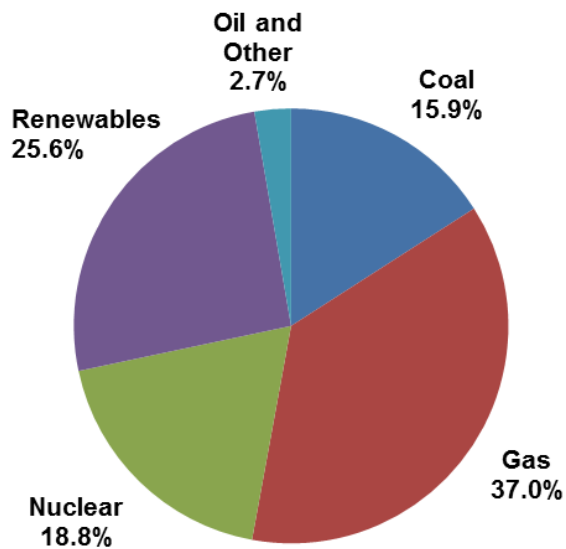
In 2017 Q1, nuclear generation increased by 1.8 per cent from 17.3 TWh to 17.6 TWh.

Wind and solar PV generation rose 10.7 per cent from 13.0 TWh to 14.4 TWh due to increased wind and solar capacity, which was slightly offset by a 6.2 per cent fall in average wind speeds and a 5.5 per cent fall in daily sun hours. Hydro generation fell by 15 per cent from 2.1 TWh to 1.8 TWh due to a 25 per cent decrease in rainfall compared with a year earlier.

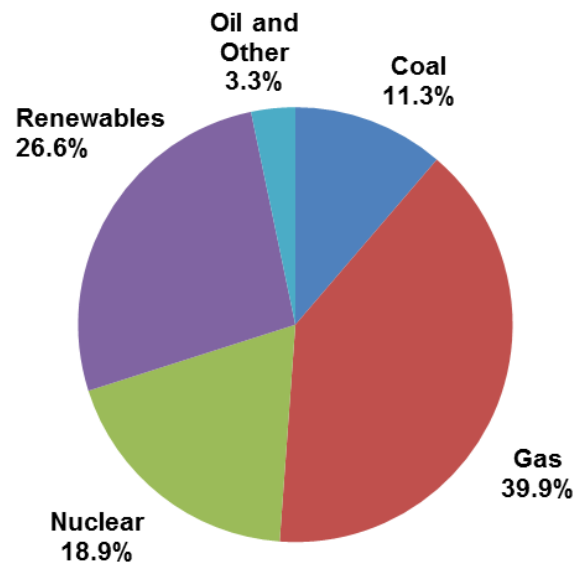
Electricity

Chart 5.2 Shares of electricity generation ([Table 5.1](#))

Q1 2016



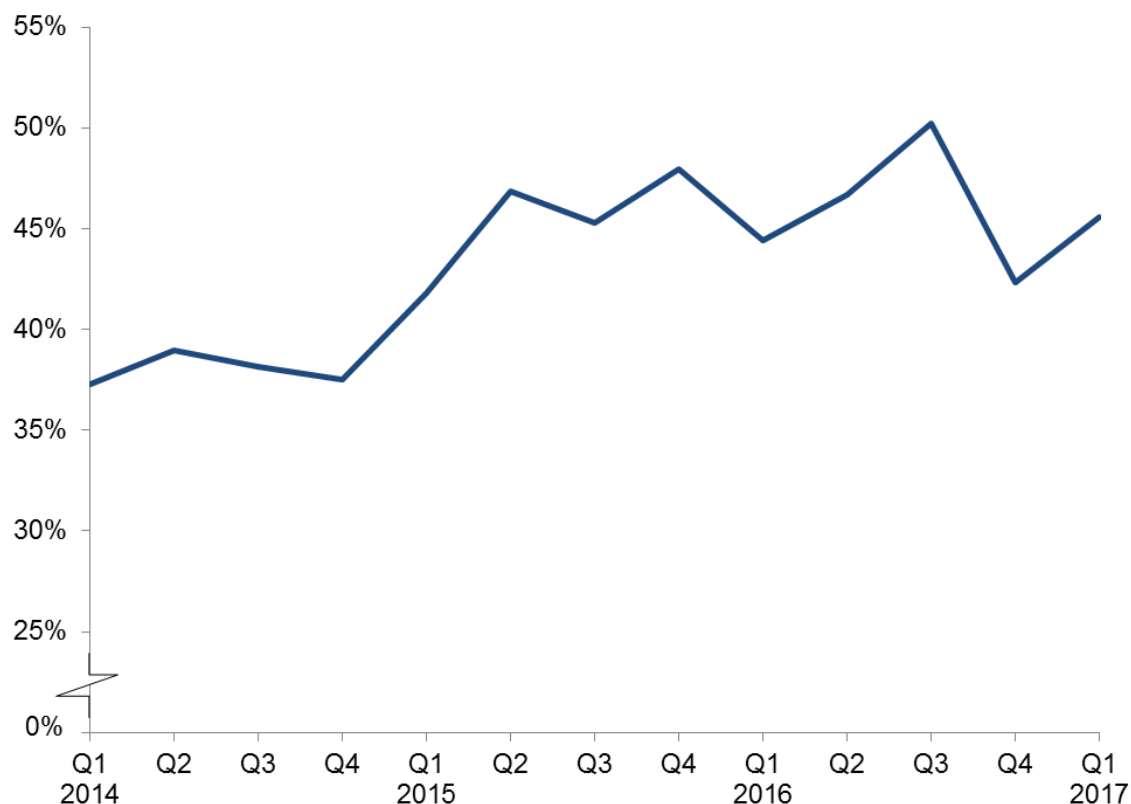
Q1 2017



The share of generation from coal decreased from 15.9 per cent in 2016 Q1 to 11.3 per cent in 2017 Q1. Gas's share of generation increased from 37.0 per cent in 2016 Q1 to 39.9 per cent in the same period, again due to decreased coal capacity and a market preference for gas generation due to the higher carbon price levy cost of coal generation.

Nuclear's share of generation increased from 18.8 per cent in 2016 Q1 to 18.9 per cent in 2017 Q1.

The share of renewables (hydro, wind and other renewables) increased from 25.6 per cent in 2016 Q1 to 26.6 per cent in 2017 Q1. This was mostly due to increased generation capacity in wind and solar.

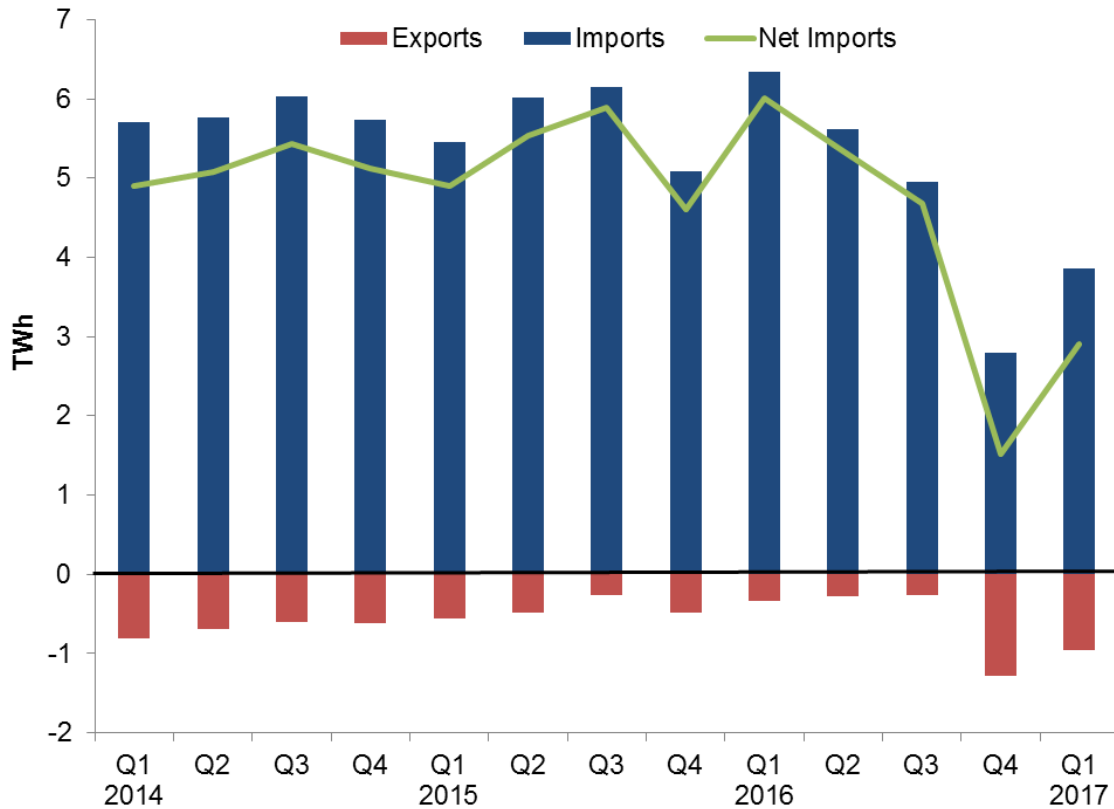
Chart 5.3 Low carbon electricity's share of generation ([Table 5.1](#))

Low carbon electricity generation includes nuclear, wind, solar, hydro and thermal renewable generation. Since renewable generation is affected by weather conditions including wind speeds, daily sun hours and volume of rainfall, this means that increased renewables capacity does not necessarily lead to increased low carbon generation share.

Low carbon electricity's share of generation increased from 44.4 per cent in 2016 Q1 to 45.6 per cent in 2017 Q1, largely due to higher renewables generation. This was mostly due to a 16.7 per cent increase in wind capacity and a 12.9 per cent increase in solar capacity.

Electricity

Chart 5.4 UK trade in electricity (Table 5.6)

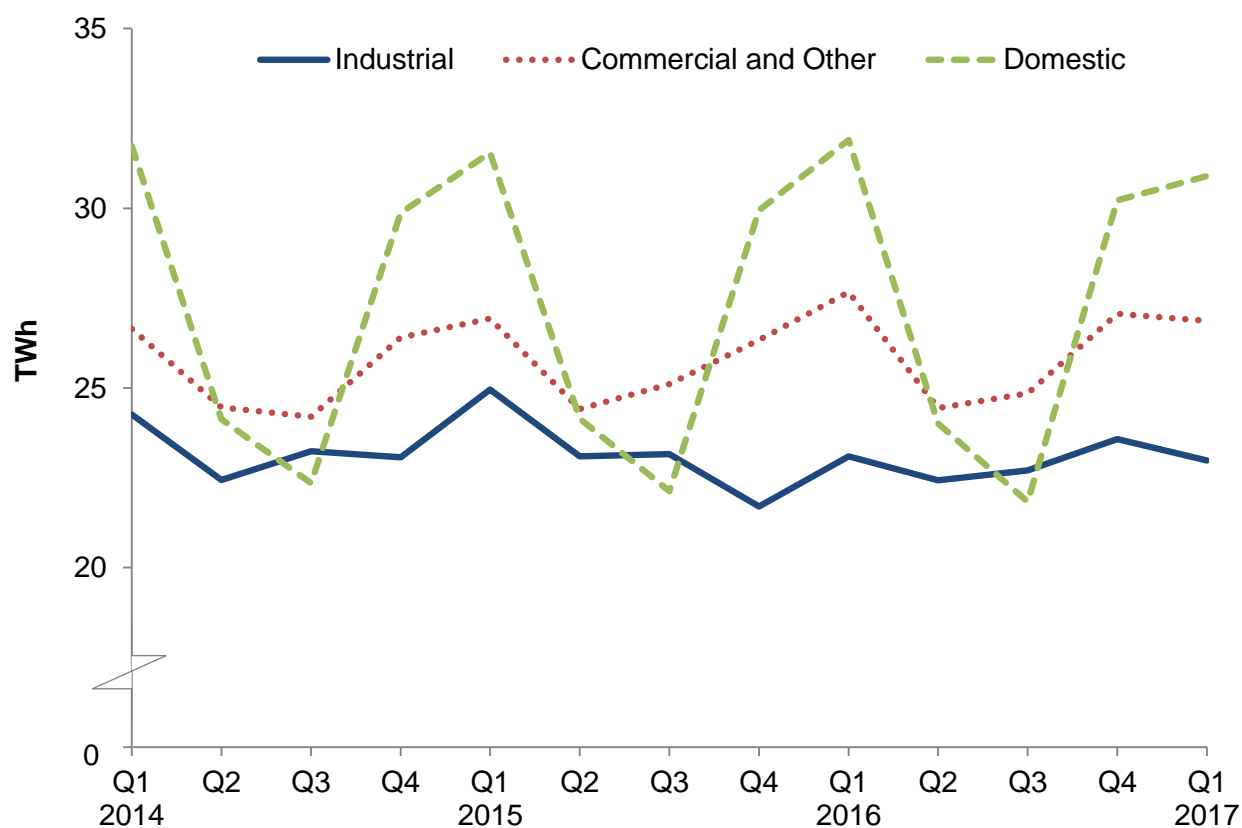


The UK has four interconnectors allowing trade with continental Europe: England-France (2 GW capacity), England-Netherlands (1 GW), Northern Ireland-Ireland (0.6 GW) and Wales-Ireland (0.5 GW).

In 2017 Q1, compared with the same period in 2016, imports of electricity fell by 39 per cent (-2.5 TWh) to 3.9 TWh, whilst exports increased by around 3 times (+0.6 TWh). The unusually low volume of imports in Q4 2016 and Q1 2017 was due to damage to the UK-France interconnector caused by a ship's anchor in November 2016. The increase in exports was mostly due to increased demand from France following a number of nuclear outages.

The UK has been a net importer of electricity since 2010 Q1. In 2017 Q1, net imports of electricity were 2.9 TWh, 52 per cent lower than 6.0 TWh in 2016 Q1. Net imports represented 3.0 per cent of electricity supplied in 2017 Q1, with net imports of 0.6 TWh from France and 1.8 TWh from the Netherlands.

Chart 5.5 Electricity final consumption (Table 5.2)



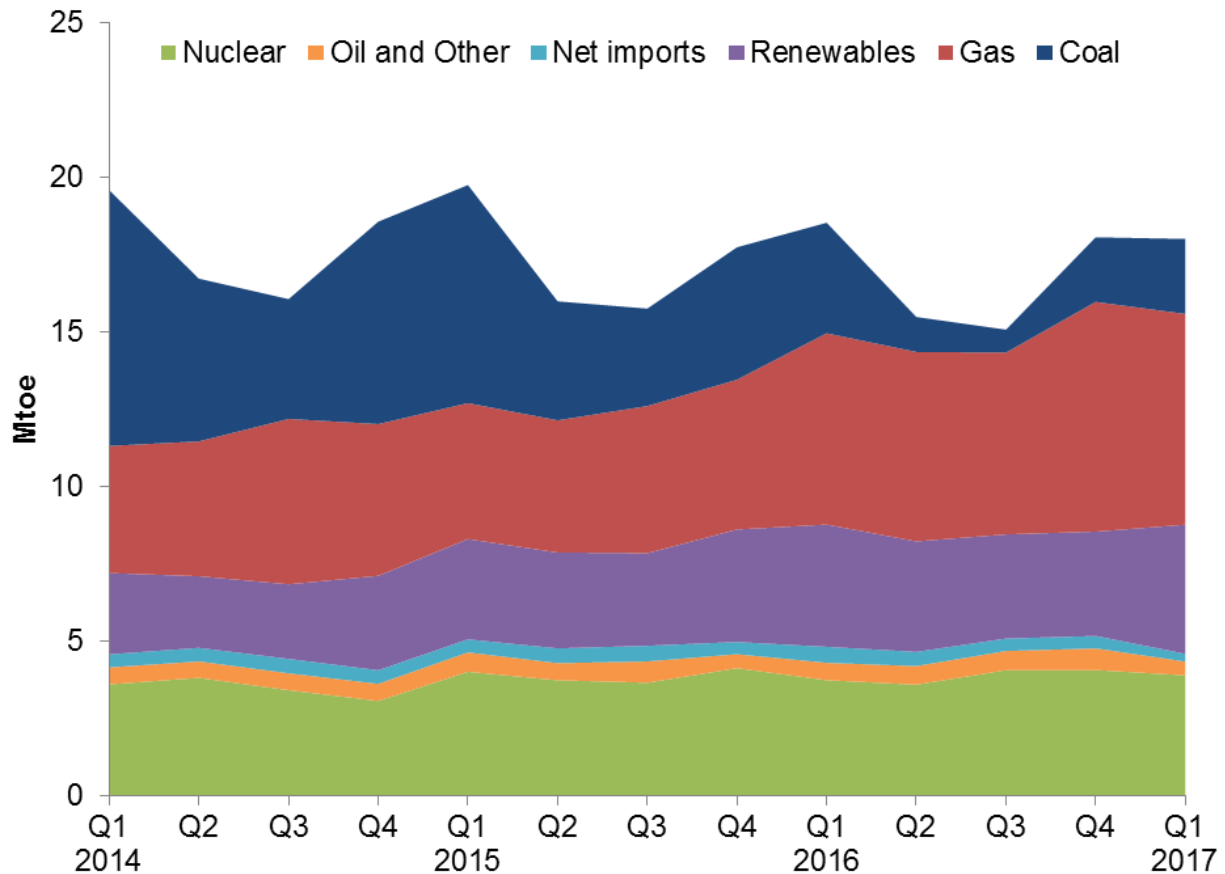
Final consumption of electricity fell by 2.3 per cent in 2017 Q1, from 82.7 TWh in 2016 Q1, to 80.7 TWh.

Domestic consumption fell by 3.2 per cent, from 31.9 TWh in 2016 Q1 to 30.9 TWh in 2017 Q1. Temperatures were on average 0.7 degrees higher than in 2016 Q1 – see Energy Trends table 7.1 at: www.gov.uk/government/statistics/energy-trends-section-7-weather.

In 2017 Q1 industrial use of electricity was 23.0 TWh, 0.5 per cent lower than the same period in 2016. Consumption by commercial and other users was 26.9 TWh, 2.9 per cent lower.

Electricity

Chart 5.6 Fuel used for electricity generation (Table 5.1)



Fuel used by generators in 2017 Q1 fell 3.2 per cent, from 18.5 mtoe in 2016 Q1 to 17.9 mtoe in 2017 Q1 (note that for wind (and other primary renewable sources), the fuel used is assumed the same as the electricity generated, unlike thermal generation where conversion losses are incurred).

In 2017 Q1, coal use was 32 per cent lower than in 2016 Q1, while gas use was 10.2 per cent higher than a year earlier as generation switched from coal to gas. Coal accounted for 13.5 per cent of all fuel use in 2017 Q1, a record Q1 low.

Nuclear sources were 1.8 per cent higher. Renewables (hydro, wind, solar and thermal renewables) accounted for 23.4 per cent of all fuel used.

5 ELECTRICITY

Table 5.1. Fuel used in electricity generation and electricity supplied

	2015	2016 p	per cent change	2015 1st quarter	2015 2nd quarter	2015 3rd quarter	2015 4th quarter	2016 1st quarter	2016 2nd quarter	2016 3rd quarter	2016 4th quarter	2017 1st quarter p	per cent change ¹
FUEL USED IN GENERATION													
All generating companies													
	Million tonnes of oil equivalent												
Coal	18.34	7.54	-58.9	7.06	3.85	3.15	4.28	3.58	1.13	0.74	2.09	2.43	-32.2
Oil	0.61	0.58	-3.6	0.14	0.13	0.17	0.17	0.11	0.15	0.16r	0.16r	0.18	+67.1
Gas	18.28	25.63	+40.2	4.40	4.28	4.76	4.85	6.19	6.13	5.88r	7.43r	6.82	+10.2
Nuclear	15.48	15.41	-0.4	4.00	3.72	3.64	4.11	3.73	3.58	4.05	4.06	3.79	+1.8
Hydro	0.54	0.46	-14.4	0.17	0.12	0.09	0.16	0.18	0.08	0.10r	0.10r	0.15	-15.0
Wind and Solar ²	4.12	4.11	-0.2	1.10	0.98	0.85	1.18	1.12	0.96	1.03r	1.00r	1.24	+10.7
Bioenergy ³	8.32	9.99	+20.0	1.97	1.99	2.05	2.31	2.66	2.54	2.25r	2.55r	2.80	+5.5
Other fuels	1.71	1.90	+10.7	0.49	0.43	0.51	0.28	0.46	0.45	0.45	0.54	0.27	-41.3
Net imports	1.80	1.78	-1.1	0.42	0.48	0.51	0.40	0.52	0.46	0.40	0.40	0.25	-51.6
Total all generating companies	69.20	67.41	-2.6	19.74	15.98	15.75	17.73	18.53	15.48	15.07r	18.33r	17.93	-3.2
ELECTRICITY GENERATED													
All generating companies													
	TWh												
Coal	75.88	30.71	-59.5	29.55	16.01	12.83	17.48	14.69	4.58	2.72	8.72r	10.52	-28.4
Oil	2.04	1.84	-9.7	0.52	0.42	0.54	0.55	0.34	0.56	0.44r	0.50r	0.83	(+)
Gas	99.88	143.36	+43.5	23.63	23.48	26.56	26.20	34.11	34.49	32.67r	42.10r	37.16	+9.0
Nuclear	70.34	71.73	+2.0	18.17	16.92	16.56	18.69	17.34	16.66	18.86	18.87	17.64	+1.8
Hydro (natural flow)	6.30	5.39	-14.4	2.01	1.43	1.03	1.83	2.09	0.94	1.15r	1.21r	1.77	-15.0
Wind and Solar ²	47.86	47.79	-0.2	12.79	11.45	9.93	13.69	13.02	11.13	11.96r	11.67r	14.41	+10.7
- of which, Offshore ⁶	17.42	16.41	-5.8	4.68	3.58	3.41	5.76	5.15	3.25	3.58r	4.42r	5.01	-2.7
Bioenergy ³	29.24	30.04	+2.7	6.95	7.01	7.06	8.22	8.52	7.70	6.22r	7.60r	8.65	+1.4
Pumped Storage	2.74	2.96	+8.0	0.72	0.65	0.65	0.71	0.76	0.69	0.69r	0.82r	0.79	+3.8
Other fuels	4.64	5.57	+20.2	1.20	1.16	1.17	1.11	1.40r	1.30r	1.34r	1.53r	1.43	+2.4
Total all generating companies	338.92	339.40	+0.1	95.56	78.53	76.34	88.49	92.27	78.04	76.06r	93.03r	93.21	+1.0
ELECTRICITY SUPPLIED⁴													
All generating companies													
	TWh												
Coal	71.99	29.14	-59.5	28.04	15.19	12.17	16.58	13.94	4.34	2.58	8.28r	9.98	-28.4
Oil	1.85	1.67	-9.7	0.47	0.38	0.49	0.50	0.30	0.51	0.40r	0.46r	0.77	(+)
Gas	98.00	140.84	+43.7	23.19	23.02	26.06	25.73	33.56	33.87	32.07r	41.34r	36.49	+8.7
Nuclear	63.89	65.15	+2.0	16.51	15.37	15.04	16.98	15.75	15.13	17.13	17.14	16.03	+1.8
Hydro	6.25	5.35	-14.4	2.00	1.41	1.02	1.82	2.07	0.93	1.14r	1.20r	1.76	-15.1
Wind and Solar ²	47.87	47.79	-0.2	12.79	11.45	9.93	13.69	13.02	11.13	11.96r	11.67r	14.41	+10.7
- of which, Offshore ⁶	17.42	16.41	-5.8	4.68	3.58	3.41	5.76	5.15	3.25	3.58r	4.42r	5.01	-2.7
Bioenergy ³	25.38	26.02	+2.5	6.03	6.08	6.12	7.15	7.41	6.69	5.34r	6.58r	7.52	+1.4
Pumped Storage (net supply) ⁵	-0.98	-1.07	+8.6	-0.25	-0.23	-0.25	-0.25	-0.27	-0.26	-0.23r	-0.30r	-0.29	+5.6
Other fuels	4.30	5.16	+20.1	1.11	1.07	1.09	1.03	1.30	1.20	1.25r	1.42r	1.33	+2.4
Net imports	20.94	17.55	-16.2	4.91	5.54	5.89	4.60	6.00	5.35	4.68	1.51	2.90	-51.6
Total all generating companies	339.49	337.59	-0.6	94.80	79.29	77.57	87.83	93.08	78.88	76.33r	89.30r	90.89	-2.4

1. Percentage change between the most recent quarter and the same quarter a year earlier.

2. Includes wave and tidal

3. Up to 2006 Q4, this includes non-biodegradable wastes. From 2007 Q1, this is included in 'Other fuels' (as it is not considered a renewable source).

4. Electricity supplied net of electricity used in generation

5. Net supply from pumped storage is usually negative, as electricity used in pumping is deducted.

6. This now includes a small amount of offshore wind generation from other generators

5 ELECTRICITY

Table 5.2 Supply and consumption of electricity

	<i>GWh</i>												
	2015	2016 p	Per cent change	2015 1st quarter	2015 2nd quarter	2015 3rd quarter	2015 4th quarter	2016 1st quarter	2016 2nd quarter	2016 3rd quarter	2016 4th quarter	2017 1st quarter p	Per cent change ¹
SUPPLY													
Indigenous production	338,917r	339,398	+0.1	95,559	78,533r	76,337	88,489r	92,267	78,039r	76,062r	93,029r	93,209	+1.0
Major power producers ^{2,3}	293,251	289,985	-1.1	84,265	66,645	64,903	77,438	80,565	65,450r	63,025r	80,945r	80,539	-
Auto producers	42,926	46,453	+8.2	10,571	11,238r	10,780	10,337r	10,940r	11,900r	12,345r	11,268r	11,879	+8.6
Other sources ⁴	2,739	2,959	+8.0	723	650	653	714	762	689	693	815	791	+3.8
Imports	22,716	19,699	-13.3	5,462	6,023	6,152	5,080	6,334	5,622	4,951	2,792	3,863	-39.0
Exports	1,778	2,153	+21.1	555	484	259	480	331	275	268	1,279	960	(+)
Transfers	-	-	-	-	-	-	-	-	-	-	-	-	-
Total supply	359,855	356,943	-0.8	100,466	84,072r	82,230	93,088r	98,271	83,386r	80,745r	94,543r	96,112	-2.2
Statistical difference	1,192	194		238	307r	193	455r	85	186r	120r	-26r	53	
Total demand	358,663	356,749	-0.5	100,228	83,765	82,037	92,633	98,356	83,200r	80,625r	94,568r	96,059	-2.3
TRANSFORMATION													
Energy industry use ⁵	27,896	26,631	-4.5	7,535	6,615	6,592	7,154	6,974	6,297r	6,273r	7,087r	6,969	-0.1
Losses	27,319	26,323	-3.6	9,256	5,499	5,065	7,499	8,713	6,016r	4,969r	6,624r	8,348	-4.2
FINAL CONSUMPTION													
Iron & steel	3,688	2,847	-22.8	990	935	887	875	708	703	707	730r	714	+1.0
Other industries	89,219	88,961	-0.3	23,969	22,156	22,267	20,827	22,387	21,728r	22,000r	22,845r	22,268	-0.5
Transport	4,516	4,669	+3.4	1,129	1,129	1,129	1,129	1,167	1,167	1,167	1,167	1,167	-
Domestic	107,764	107,971	+0.2	31,546	24,148	22,124	29,947	31,904	24,014	21,831r	30,222r	30,894	-3.2
Other final users	98,262	99,347	+1.1	25,804	23,282	23,974	25,202	26,502	23,274	23,679	25,892r	25,698	-3.0
Non energy use	-	-	-	-	-	-	-	-	-	-	-	-	-

1. Percentage change between the most recent quarter and the same quarter a year earlier.

2. Companies that produce electricity from nuclear sources plus all companies whose prime purpose is the generation of electricity are included under the heading "Major Power Producers". At the end of December 2015 they were:

AES Electric Ltd., Anesco Ltd., Baglan Generation Ltd., British Energy plc., British Solar Renewables Ltd., Centrica Energy, Centrica Renewable Energy Ltd., CEP Wind 2, Coolkeeragh ESB Ltd., Corby Power Ltd., Coryton Energy Company Ltd., Cubico Sustainable Investments Ltd., Deeside Power Development Company Ltd., DONG Energy Burbo UK Ltd., Drax Power Ltd., EDF Energy plc., EDF Energy Renewables Ltd., Eggborough Power Ltd., E.On UK plc., Eneco Wind UK Ltd., Energy Power Resources, Falck Renewables Ltd., Fellside Heat and Power Ltd., First Hydro Company., Greencoat UK Wind plc., Immingham CHP, Infinis plc., International Power Mitsui, Lark Energy Ltd., Lightsource Renewable Energy Ltd., London Waste Ltd., Lynemouth Power Ltd., Magnox North Ltd., Marchwood Power Ltd., Peel Energy Ltd., Premier Power Ltd., Riverside Resource Recovery Ltd., Rocksavage Power Company Ltd., RWE Innogy Markinch Ltd., RWE Npower plc., Saltend Cogeneration Company Ltd., Scira Offshore Energy Ltd., Scotia Wind (Craigengelt) Ltd., Scottish Power plc., Scottish and Southern Energy plc., Seabank Power Ltd., SELCHP Ltd., Sembcorp Utilities (UK) Ltd., Severn Power Ltd., Slough Heat and Power Ltd., Spalding Energy Company Ltd., Statkraft Energy Ltd., Statkraft Wind UK Ltd., Third Energy Trading Ltd.

3. This table includes the change of definition of Major power producers (MPPs) to include major wind farm companies. Details of this change of definition were given in an article on pages 43 to 48 of the September 2008 edition of Energy Trends.

4. Gross supply from pumped storage hydro.

5. Includes electricity used in generation and for pumping, along with energy used by other fuel industries (including coal and coke, blast furnaces, extraction of oil and gas, petroleum refineries, nuclear fuel production and gas and electricity supply).

Section 6 - Renewables

Key results show:

Renewables' share of electricity generation was 26.6 per cent in 2017 Q1, up 1.0 percentage points on the share in 2016 Q1, reflecting increased capacity. Wind speeds and rainfall were lower than last year. **(Chart 6.1)**

Renewable electricity generation was a record 24.8 TWh in 2017 Q1, an increase of 5.1 per cent on the 23.6 TWh in 2016 Q1. **(Chart 6.2)**

Onshore wind increased by 1.3 TWh (20 per cent) to 7.7 TWh in 2017 Q1, the highest increase across the technologies. Total wind generation increased by 10 per cent to 12.7 TWh; the increase in capacity was partially offset by lower wind speeds. Solar increased by 16 per cent, from 1.5 TWh in 2016 Q1 to 1.7 TWh in 2017 Q1 due to increased capacity. **(Chart 6.2)**

Renewable electricity capacity was 36.9 GW at the end of 2017 Q1, a 12 per cent increase (4.0 GW) on a year earlier, and a 3.3 per cent increase (1.2 GW) on the previous quarter. Of both increases in 2017 Q1, over half was due to new onshore wind capacity. **(Chart 6.3)**

In 2017 Q1, just 54 MW of capacity eligible for the Feed in Tariff scheme was installed, increasing the total to 6.1 GW, across 897,135 installations. **(Chart 6.5)**

Liquid biofuels consumption provisionally rose by 6.7 per cent, from 327 million litres in 2016 Q1 to 349 million litres in 2017 Q1. This represented 3.1 per cent of petrol and diesel consumed in road transport. **(Chart 6.6)**

Relevant tables

6.1: Renewable electricity capacity and generation

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6.2: Liquid biofuels for transport consumption

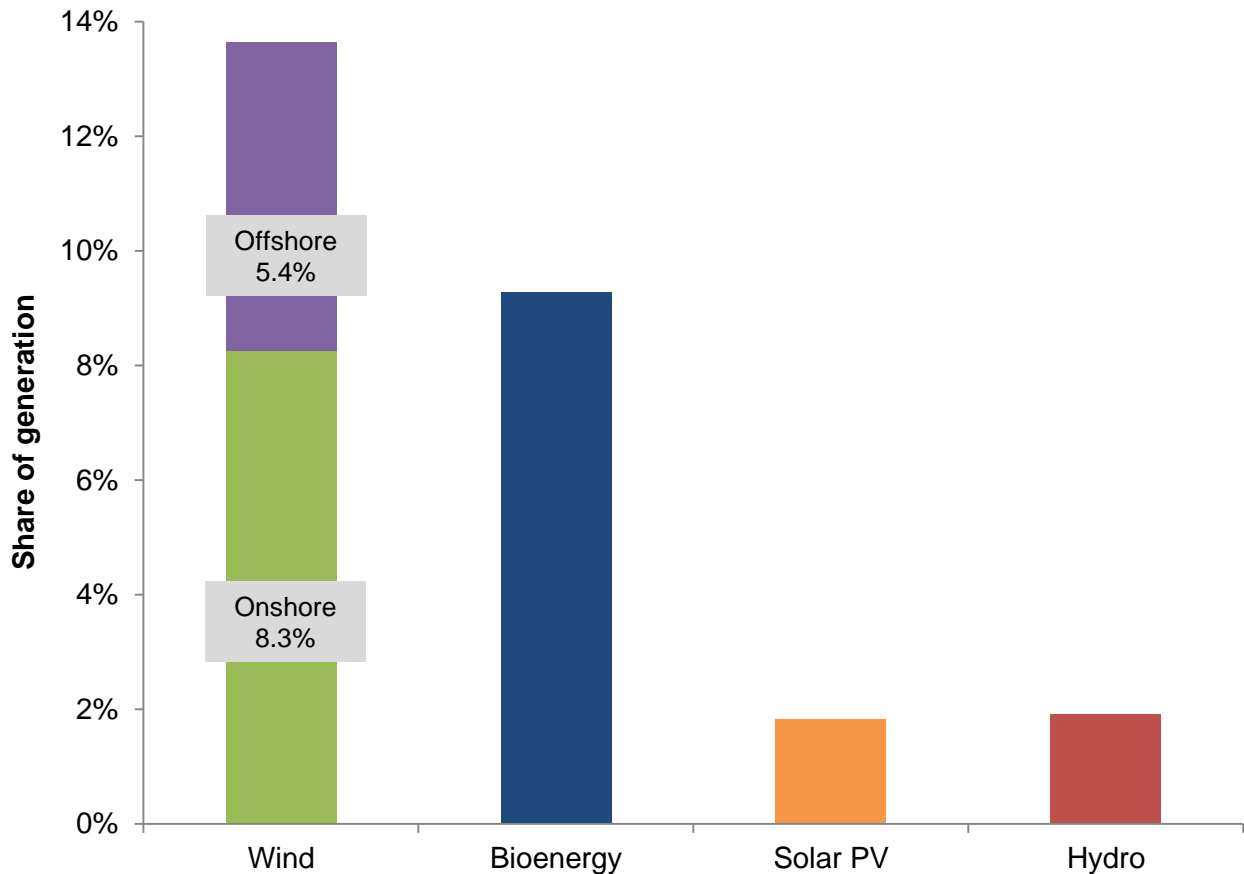
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Chart 6.1 Renewables' share of electricity generation ([Table 6.1](#))

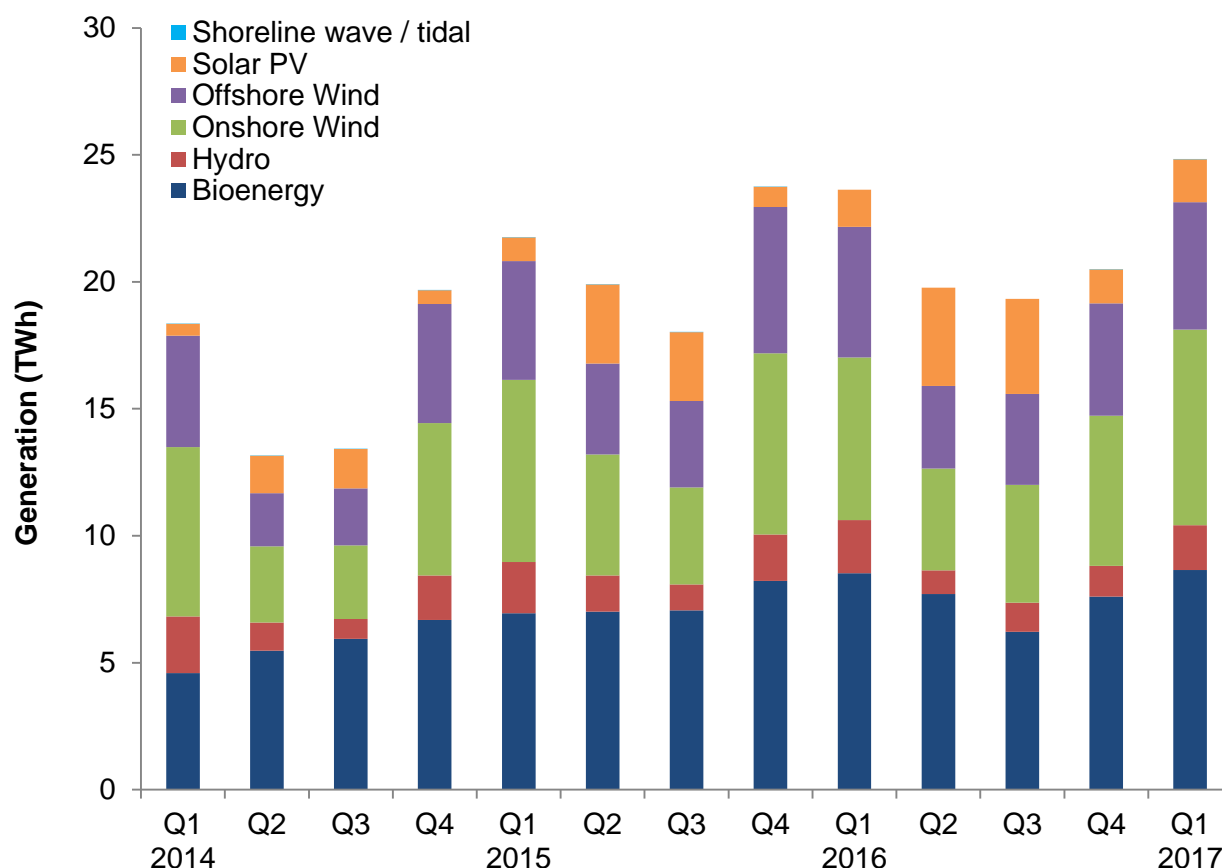
Renewables' share of electricity generation increased from 25.6 per cent in 2016 Q1 to 26.6 per cent in 2017 Q1, but remained 0.2 percentage points lower than 2015 Q4's record 26.8 per cent.

The increase on a year earlier reflects increased capacity, particularly in onshore wind and solar PV. Average wind speeds and rainfall were both lower than last year.

Total electricity generated from renewables in 2017 Q1 was up by 5.1 per cent on 2016 Q1, from 23.6 TWh to a new record of 24.8 TWh.

Overall electricity generation was 93.2 TWh in 2017 Q1, up 1.0 per cent on a year earlier (92.3 TWh). This increase in overall generation partly offset the increase in renewables' share of electricity generation by 0.3 percentage points.

Total electricity generation figures (all generating companies) can be found in table ET 5.1, at: www.gov.uk/government/statistics/electricity-section-5-energy-trends

Chart 6.2 Renewable electricity generation (Table 6.1)

In 2017 Q1, electricity generated from onshore wind increased by 20 per cent, from 6.4 TWh in 2016 Q1 to 7.7 TWh, though generation from offshore wind fell by 2.7 per cent to 5.0 TWh. The far higher increase in capacity for onshore wind, compared to offshore wind, offset the lower wind speeds during the quarter. Wind speeds in 2017 Q1, at 9.2 knots, were down 0.6 knots on both the long term mean and 2016 Q1 - see Energy Trends table 7.2 at:

www.gov.uk/government/statistics/energy-trends-section-7-weather.

Generation from solar photovoltaics increased by 16 per cent (0.2 TWh) to 1.7 TWh compared to 2016 Q1, due to increased capacity.

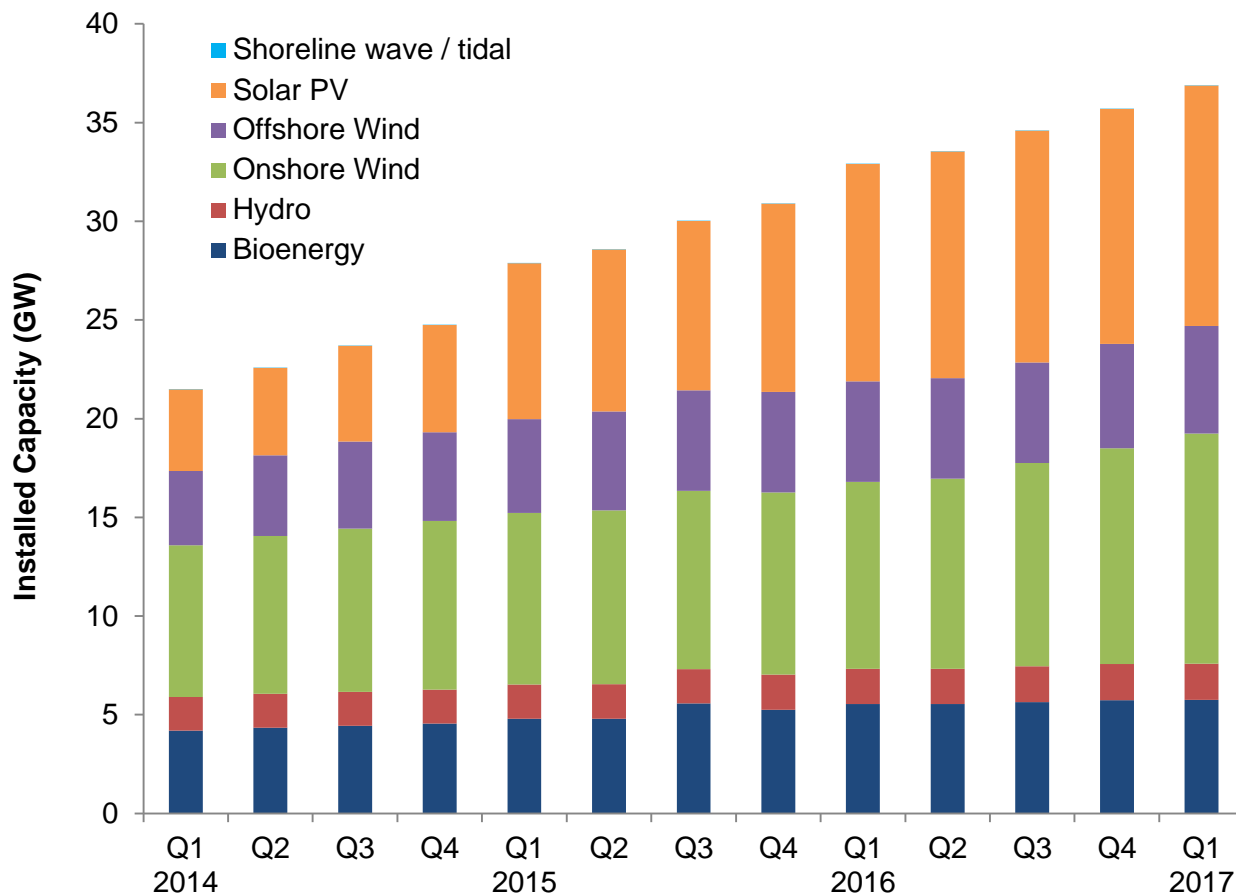
Hydro generation fell by 15 per cent on a year earlier to 1.8 TWh; average rainfall (in the main hydro catchment areas) fell by 24 per cent during the quarter, which included the driest January since 2010 - see Energy Trends table 7.4 at:

www.gov.uk/government/statistics/energy-trends-section-7-weather.

In 2017 Q1, generation from bioenergy¹ increased by 1.4 per cent on a year earlier, from 8.5 TWh to 8.6 TWh, with small increases in generation from plant biomass and biodegradable waste partly offset by reduced generation from landfill gas.

Bioenergy had the largest share of generation (36 per cent) with, 27 per cent from onshore wind, 22 per cent from offshore wind, 8.8 per cent from hydro and 6.2 per cent from solar PV.

¹ Bioenergy consists of: landfill gas, sewage gas, energy from waste, plant biomass, animal biomass, anaerobic digestion and co-firing (generation only)

Chart 6.3 Renewable electricity capacity (as at end of quarter) (Table 6.1)

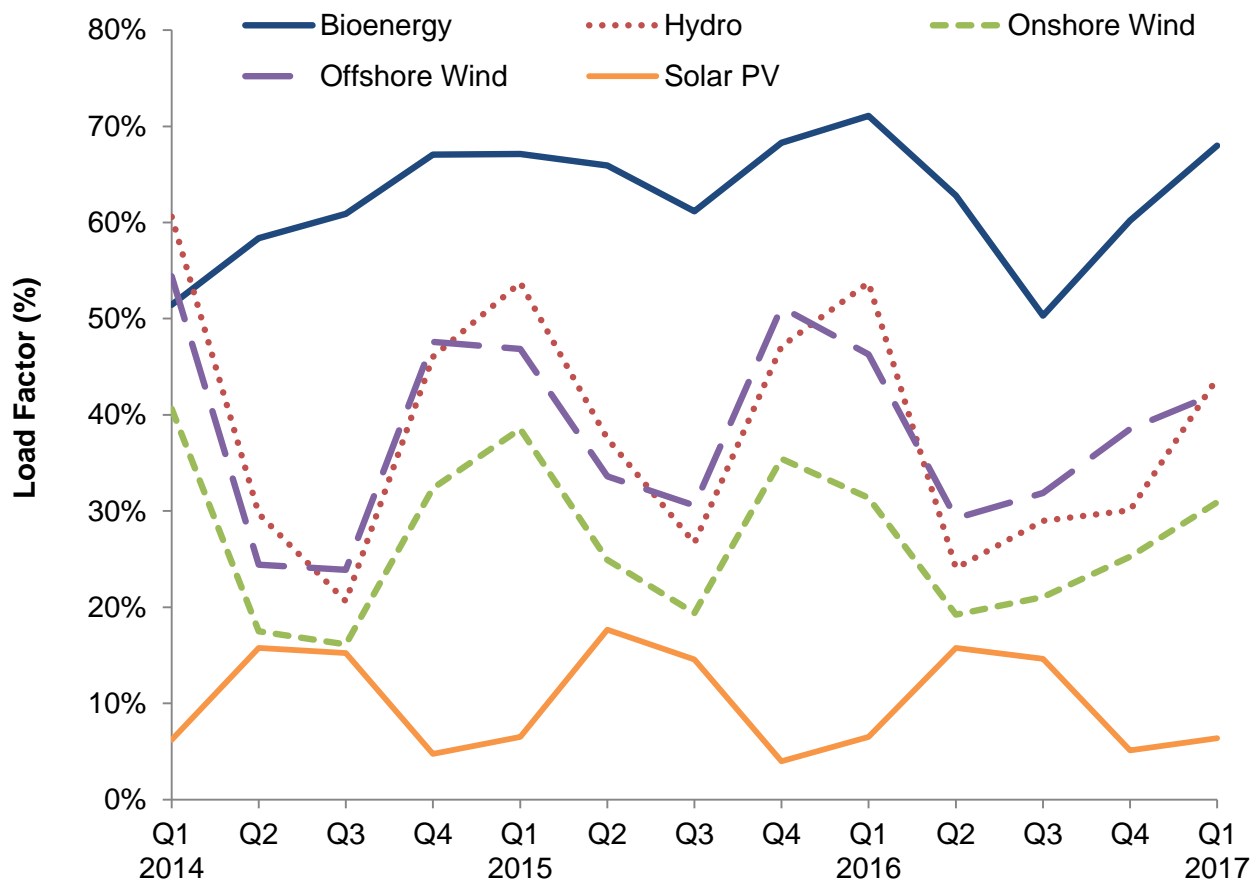
At the end of 2017 Q1, the UK's renewable electricity capacity totalled 36.9 GW, an increase of 12 per cent (4.0 GW) on that installed at the end of 2016 Q1, and 3.3 per cent (1.2 GW) higher than the previous quarter.

At the end of 2017 Q1, solar PV, at 12.2 GW, represented one-third of all renewable capacity, the highest share of renewable technologies. This was followed by onshore wind (32 per cent), bioenergy (16 per cent) and offshore wind (15 per cent).²

Compared with a year ago, onshore wind capacity increased by 2.2 GW (23 per cent), and offshore wind by 0.4 GW (7.1 per cent). Solar PV increased by 1.2 GW, with 0.3 GW of this deployed in the latest quarter, with the closure of the Renewables Obligation (RO) to the remaining new (grace period) solar schemes on 31 March 2017. During the quarter, a second solar PV scheme registered for support under Contracts for Differences (CfDs), the 10 MW, Triangle, began generating.

During 2017 Q1, onshore wind capacity increased by 742 MW, with the opening of many new wind farms, including the 69 MW Corriegarh, 54 MW Ray and 45 MW Corriemollie sites – all in Scotland - and a further 39 MW of the Pen y Cymoedd wind farm in Wales (raising capacity to 195 MW). Offshore wind capacity increased by 160 MW, with the completion of Burbo Bank Extension (increasing from 200 MW to 258 MW) and generation beginning at the first 102 MW (across two phases) of Dudgeon (402 MW when complete).

² To note that renewable generation and capacity figures include installations accredited on all support schemes (Renewables Obligation, Feed in Tariffs, Contracts for Difference), as well as those not eligible for support or are commissioned but awaiting support accreditation. This should particularly be noted for solar PV (and onshore wind), where figures consist of many installations across several or all of these categories.

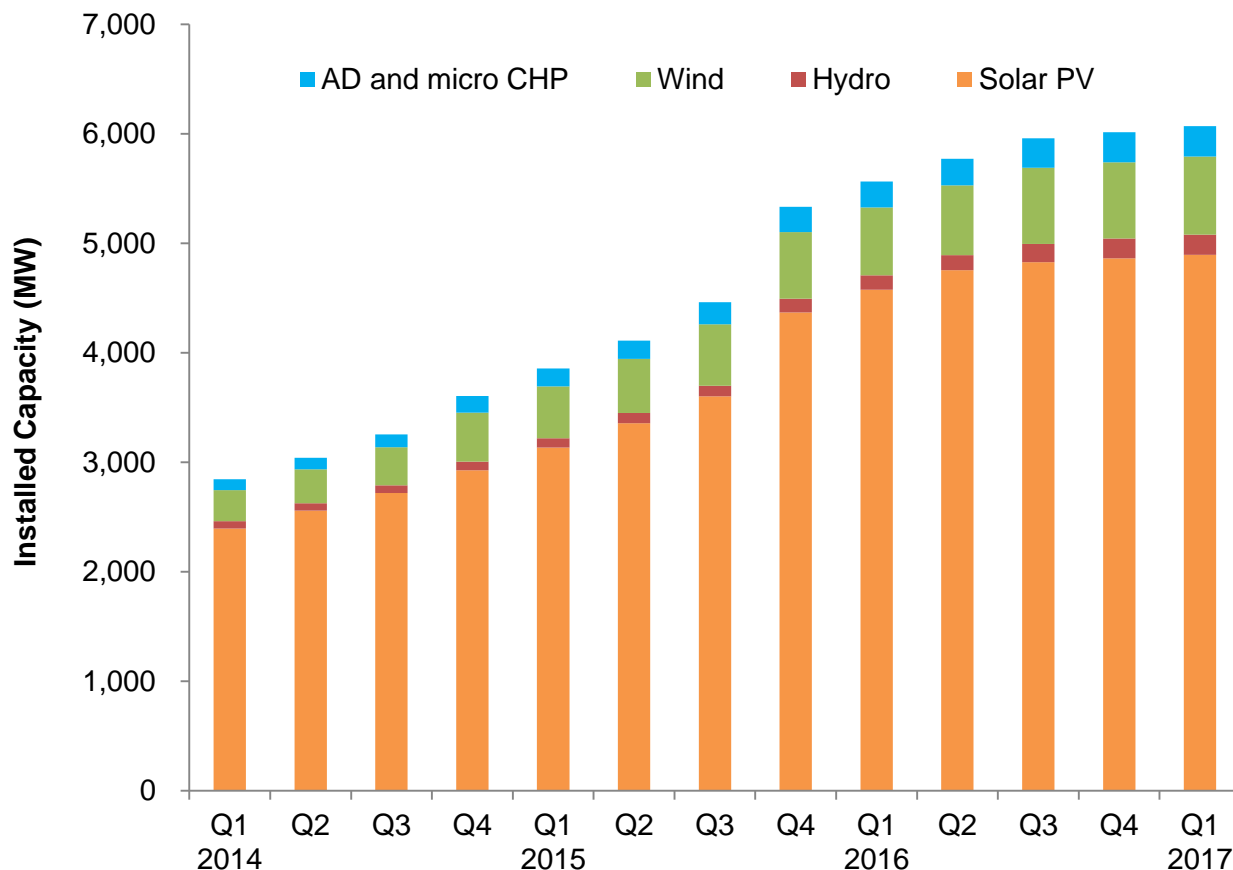
Chart 6.4 Renewable electricity load factors (Table 6.1)

In 2017 Q1, onshore wind's load factor fell by 0.5 percentage points, from 31.4 per cent in 2016 Q1 to 30.9 per cent, due to lower onshore wind speeds. Meanwhile, offshore wind's load factor fell by 4.0 percentage points, from 46.3 per cent in 2016 Q1 to 42.3 per cent in 2017 Q1.³ Compared with 2016 Q4 – the calmest Q4 in the last 16 years - onshore and offshore wind's load factors were up by 5.7 and 3.7 percentage points, respectively, with wind speeds up 1.6 knots.

Hydro's load factor in 2017 Q1 fell by ten percentage points, from 53.7 per cent in 2016 Q1 to 43.8 per cent, with average rainfall down by 24 per cent. Compared with 2016 Q4 – the driest Q4 in the last 16 years - hydro's load factor in 2017 Q1 was up by 14 percentage points, from 30.1 per cent, with average rainfall up by 23 per cent.

For bioenergy, the load factor in 2017 Q1 was 68.0 per cent, down 3.1 percentage points on the record 71.1 per cent in 2016 Q1, but up 7.8 percentage points on 2016 Q4, reflecting the full return to operation of the biomass units at Drax power station, following maintenance outages in the second half of 2016.

³ Load Factors are calculated using an average of capacity at the start and end of the quarter. Therefore, they can be influenced by the time in the quarter when any new capacity came online. This may particularly be the case for large wind farms, such as London Array offshore, that come online incrementally throughout the quarter.

Chart 6.5 Feed in Tariffs: eligible installed capacity (as at end of quarter)

At the end of 2017 Q1, 6.1 GW of capacity was installed and eligible for the GB Feed in Tariff (FiT) scheme⁴, a 9.1 per cent increase on that at the end of 2016 Q1. Much (0.2 GW) of this 0.5 GW increase occurred in 2016 Q2, with around 50 MW being installed in each of the last two quarters, reflecting the new CAPs mechanism.

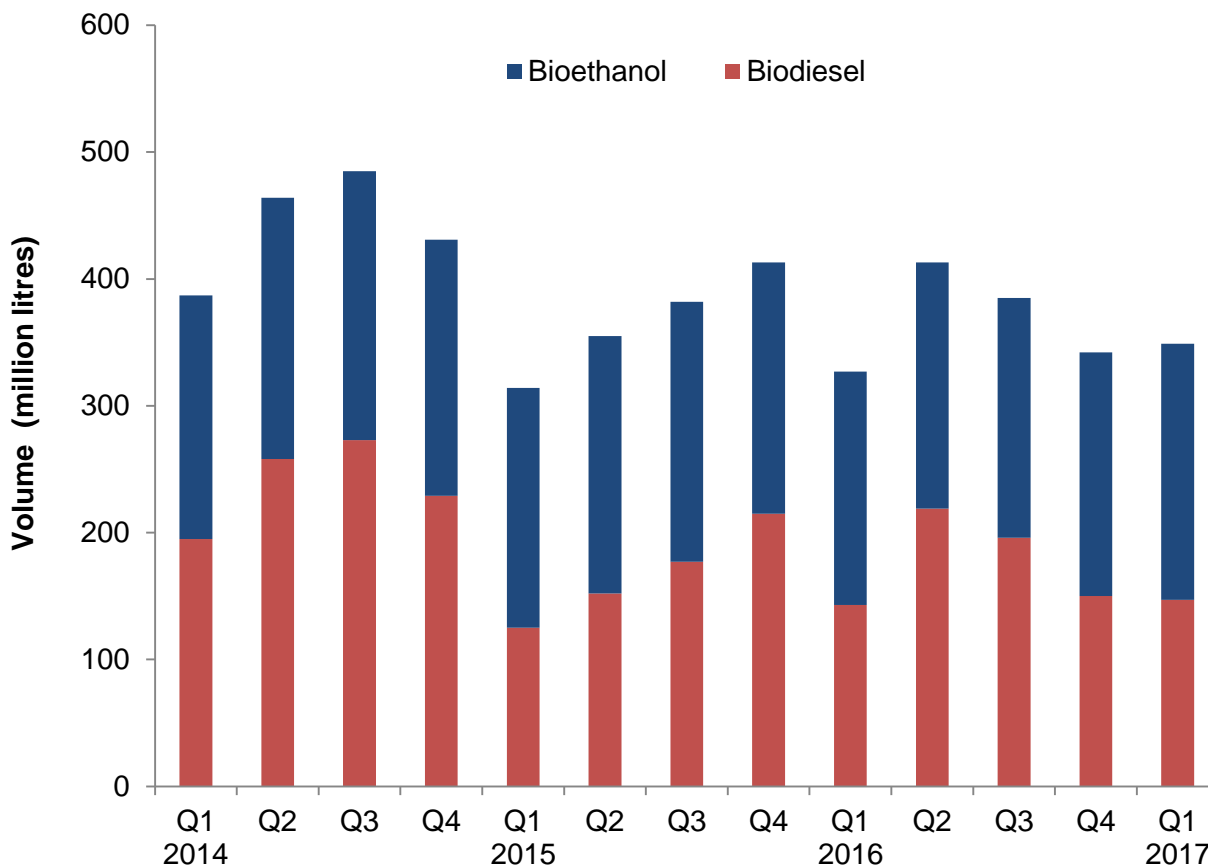
In terms of number of installations, at the end of 2017 Q1, there were 897,135 eligible for the FiT scheme, a 1.1 per cent increase on the 887,493 confirmed at the end of the previous quarter, and 4.6 per cent higher than the 857,439 schemes confirmed at the end of 2016 Q1.

Solar photovoltaics (PVs) represent the majority of both installations and installed capacity confirmed on FiTs, with, respectively, 99 per cent and 81 per cent of the total. The majority of PV installations are sub-4 kW retrofitted schemes, which increased by 35,181 (82 MW) from 2016 Q1 to bring the total to 836,014 (2,421 MW) at the end of 2017 Q1.

Renewable installations confirmed on FiTs (all except MicroCHP) represented 16 per cent of all renewable installed capacity.

Statistics on Feed in Tariffs can be found at: www.gov.uk/government/collections/feed-in-tariff-statistics

⁴ Data are for schemes accredited under the Microgeneration Certification Scheme (MCS) and ROOFIT, which are pre-requisites for registering for the FiT scheme; not all of these installations will eventually be confirmed onto the FiT scheme.

Chart 6.6 Liquid biofuels for transport consumption (Table 6.2)

In 2017 Q1, 349 million litres of liquid biofuels were consumed in transport, a rise of 6.7 per cent on the total in 2016 Q1 (327 million litres).

Bioethanol consumption increased by 9.8 per cent, from 184 million litres in 2016 Q1 to 202 million litres in 2017 Q1, while biodiesel consumption rose by 2.8 per cent, from 143 million litres in 2016 Q1 to 147 million litres in 2017 Q1.

In 2017 Q1, the largest share of consumption was from bioethanol (58 per cent), with the remaining 42 per cent coming from biodiesel, compared with 2016 Q1's shares of 56 per cent and 44 per cent respectively.

In 2017 Q1, biodiesel accounted for 2.0 per cent of total diesel consumed in transport, and bioethanol a record 5.0 per cent of motor spirit. The combined contribution of the two fuels was 3.1 per cent, 0.2 percentage points higher than 2016 Q1's share.

6 RENEWABLES

Table 6.1. Renewable electricity capacity and generation

	2015	2016 p	per cent change	2015 1st quarter	2015 2nd quarter	2015 3rd quarter	2015 4th quarter	2016 1st quarter	2016 2nd quarter	2016 3rd quarter	2016 4th quarter	2017 1st quarter p	per cent change ¹²
Cumulative Installed Capacity¹													MW
Onshore Wind	9,222	10,924	+18.5	8,707	8,810	9,022	9,222	9,479r	9,633r	10,295r	10,924	11,655	+23.0
Offshore Wind	5,094	5,294	+3.9	4,739	5,014	5,094	5,094	5,094	5,094	5,094	5,294	5,453	+7.1
Shoreline wave / tidal	9	13	+50.9	9	9	9	9	8	8	8	13	13	+73.2
Solar photovoltaics	9,535	11,899	+24.8	7,900	8,206	8,581	9,535	11,008r	11,469r	11,742r	11,899	12,178	+10.6
Small scale Hydro	299	358	+19.6	260	266	271	299	307r	311r	343r	358	360	+17.3
Large scale Hydro	1,477	1,477	-	1,477	1,477	1,477	1,477	1,477	1,477	1,477	1,477	1,477	-
Landfill gas	1,061	1,062	+0.1	1,061	1,061	1,061	1,061	1,062r	1,062r	1,062r	1,062	1,062	-
Sewage sludge digestion	231	257	+11.3	231	231	231	231	231	257	257	257	257	+0.2
Energy from waste	925	1,017	+9.9	826	834	902	925	934r	934r	983r	1,017	1,032	+10.6
Animal Biomass (non-AD) ²	111	129	+17.0	111	111	111	111	129	129	129	129	129	-
Anaerobic Digestion	323	420	+29.9	263	266	299	323	370r	377r	405r	420	426	+15.1
Plant Biomass ³	2,607	2,850	+9.3	2,297	2,298	2,963	2,607	2,787r	2,787r	2,796r	2,850	2,850	+2.3
Total	30,893	35,700	+15.6	27,880	28,582	30,021	30,893	32,909r	33,537r	34,591r	35,700	36,894	+12.1
Co-firing ⁴	21	13	-35.9	21	21	21	21	13r	13r	13r	13	2	-83.1
Generation⁵													GWh
Onshore Wind ⁶	22,894	20,962	-8.4	7,176	4,767	3,817	7,135	6,406r	4,010r	4,631r	5,915	7,703	+20.2
Offshore Wind ^{6,7}	17,423	16,406	-5.8	4,676	3,578	3,412	5,757	5,150r	3,253r	3,584r	4,419	5,014	-2.7
Shoreline wave / tidal ⁶	2	0	-99.6	1	0	0	0	-	-	-	0	0	-
Solar photovoltaics ⁶	7,546	10,420	+38.1	938	3,109	2,701	798	1,464r	3,872r	3,750r	1,335	1,691	+15.6
Hydro ⁶	6,299	5,395	-14.4	2,011	1,425	1,028	1,834	2,089r	938r	1,154r	1,214	1,774	-15.1
Landfill gas ⁶	4,872	4,703	-3.5	1,240	1,212	1,201	1,220	1,218r	1,171r	1,158r	1,156	1,071	-12.1
Sewage sludge digestion ⁶	894	950	+6.3	225	233	217	220	236r	251r	229r	234	235	-0.4
Energy from waste ⁸	2,585	2,741	+6.0	607	603	687	688	728r	626r	677r	710	858	+17.8
Co-firing with fossil fuels	183	117	-35.9	36	36	57	55	51	15	5r	47	20	-61.3
Animal Biomass (non-AD) ^{2,6}	648	650	+0.4	170	171	142	165	171	165	140r	173	198	+15.6
Anaerobic Digestion	1,471	2,052	+39.5	325	349	371	426	482r	492r	524r	554	507	+5.1
Plant Biomass ^{3,6}	18,587	18,829	+1.3	4,351	4,409	4,383	5,443	5,637r	4,981r	3,481r	4,730	5,757	+2.1
Total	83,403	83,225	-0.2	21,755	19,893	18,015	23,741	23,633r	19,773r	19,333r	20,485	24,827	+5.1
Non-biodegradable wastes ⁹	2,586	2,742	+6.0	607	604	687	688	728r	626r	678r	710	858	+17.8
Load Factors¹⁰													
Onshore Wind	29.4%	23.7%		38.5%	24.9%	19.4%	35.4%	31.4%r	19.2%r	21.0%	25.2%	31.6%	
Offshore Wind	41.5%	36.0%		46.9%	33.6%	30.6%	51.2%	46.3%r	29.2%r	31.9%	38.5%	43.2%	
Solar photovoltaics	11.5%	11.1%		6.5%	17.7%	14.6%	4.0%	6.5%r	15.8%r	14.6%	5.1%	6.5%	
Hydro	41.0%	34.0%		53.7%	37.5%	26.7%	47.1%	53.7%r	24.1%r	29.0%	30.1%	44.7%	
Landfill gas	52.5%	50.4%		54.2%	52.3%	51.2%	52.1%	52.5%r	50.5%r	49.4%	49.3%	46.7%	
Sewage sludge digestion	45.7%	44.3%		46.6%	46.1%	42.4%	43.1%	44.3%r	44.7%r	40.3%	41.3%	42.3%	
Energy from waste	36.8%	32.1%		37.3%	33.3%	35.8%	34.1%	35.9%r	30.7%r	32.0%	32.1%	38.8%	
Animal Biomass (non-AD)	66.9%	61.7%		71.1%	70.9%	58.1%	67.7%	65.4%r	58.5%r	49.2%	60.7%	70.9%	
Anaerobic Digestion	59.8%	62.8%		60.1%	60.6%	59.5%	61.9%	63.7%r	60.4%r	60.7%	60.8%	55.5%	
Plant Biomass	87.5%	78.6%		88.7%	87.9%	75.5%	88.5%	95.7%r	81.8%r	56.5%	75.9%	93.5%	
Total (excluding co-firing and non-biodegradable wastes)	34.1%	28.4%		38.2%	32.2%	27.8%	35.2%	33.8%r	27.2%r	25.7%	26.3%	31.6%	

1. Cumulative capacity at the end of the quarter/year

2. Includes the use of poultry litter and meat and bone.

3. Includes the use of straw and energy crops. Also includes high-range co-firing (>85% biomass).

4. This is the amount of fossil fuelled capacity used for co-firing of renewables based on the proportion of generation accounted for by the renewable source over the course of the year.

5. Generation figures for the latest quarter are highly provisional, particularly for the thermal renewable technologies (such as landfill gas) in the lower half of the table.

6. Actual generation figures are given where available, but otherwise are estimated using a typical load factor or the design load factor, where known. Generation from FIT schemes is estimated this way.

7. For 2009, shoreline wave and tidal are included in offshore wind.

8. Biodegradable part only, which accounts for 50% from 2015.

9. Non-biodegradable (50% from 2015) part of Energy from Waste, plus a small quantity of generation from waste tyres, hospital waste and general industrial waste.

10. Load factors are calculated based on installed capacity at the beginning and the end of the quarter/year. These can be influenced by the time in the period when new capacity came online.

Load factors on an *unchanged configuration* basis, which consider just those sites operational throughout the year, are available annually in table DUKES 6.5, at: www.gov.uk/government/publications/renewable-sources-of-energy-chapter-6-digest-of-united-kingdom-energy-statistics-dukes

11. Percentage change between the most recent quarter and the same quarter a year earlier; (+) represents a positive percentage change greater than 100%.

6 RENEWABLES

Table 6.2. Liquid biofuels for transport consumption

	2015	2016	per cent change	2015 1st quarter	2015 2nd quarter	2015 3rd Quarter	2015 4th Quarter	2016 1st quarter	2016 2nd quarter	2016 3rd Quarter	2016 4th Quarter	2017 1st Quarter p	per cent change ¹
Volume (million litres)													
Bioethanol	795	759	-4.5	189	203	205	198	184	194	189	192	202	9.8%
Biodiesel	669	708	+5.8	125	152	177	215	143	219	196	150	147	2.8%
Total biofuels for transport	1,464	1,467	+0.2	314	355	382	413	327	413	385	342	349	6.7%
Energy (thousand toe)													
Bioethanol	448	428	-4.5	107	114	116	112	104	109	107	108	114	9.8%
Biodiesel	550	582	+5.8	103	125	145	177	117	180	161	123	121	2.8%
Total biofuels for transport	998	1,010	+1.2	209	239	261	288	221	289	268	231	235	6.1%
Shares of road fuels (volume basis)													
Bioethanol as per cent of Motor Spirit	4.6%	0.0%		4.6%	4.6%	4.7%	4.5%	4.5%	4.4%	4.4%	4.5%	5.0%	
Biodiesel as per cent of DERV	2.3%	0.0%		1.8%	2.1%	2.4%	2.9%	2.0%	2.9%	2.6%	1.9%	2.0%	
Total biofuels as per cent of road fuels	3.2%	0.0%		2.9%	3.0%	3.3%	3.5%	2.9%	3.4%	3.2%	2.8%	3.1%	

1. Percentage change between the most recent quarter and the same quarter a year earlier.

Source: HM Revenue and Customs Hydrocarbon Oils Bulletin, available at:

www.uktradeinfo.com/Statistics/Pages/TaxAndDutybulletins.aspx

Shares of road fuels - % change on quarter in previous year

	% change on quarter in previous year (-ve value is decrease)									
Bioethanol as per cent of Motor Spirit	0.1%	0.1%	-0.1%	0.0%	-0.1%	-0.2%	-0.3%	-0.1%	0.5%	
Biodiesel as per cent of DERV	-1.1%	-1.6%	-1.4%	-0.3%	0.2%	0.8%	0.2%	-0.9%	0.0%	
Total biofuels as per cent of road fuels	-0.7%	-1.0%	-0.9%	-0.2%	0.0%	0.4%	0.0%	-0.7%	0.2%	

Renewable energy in 2016

Introduction

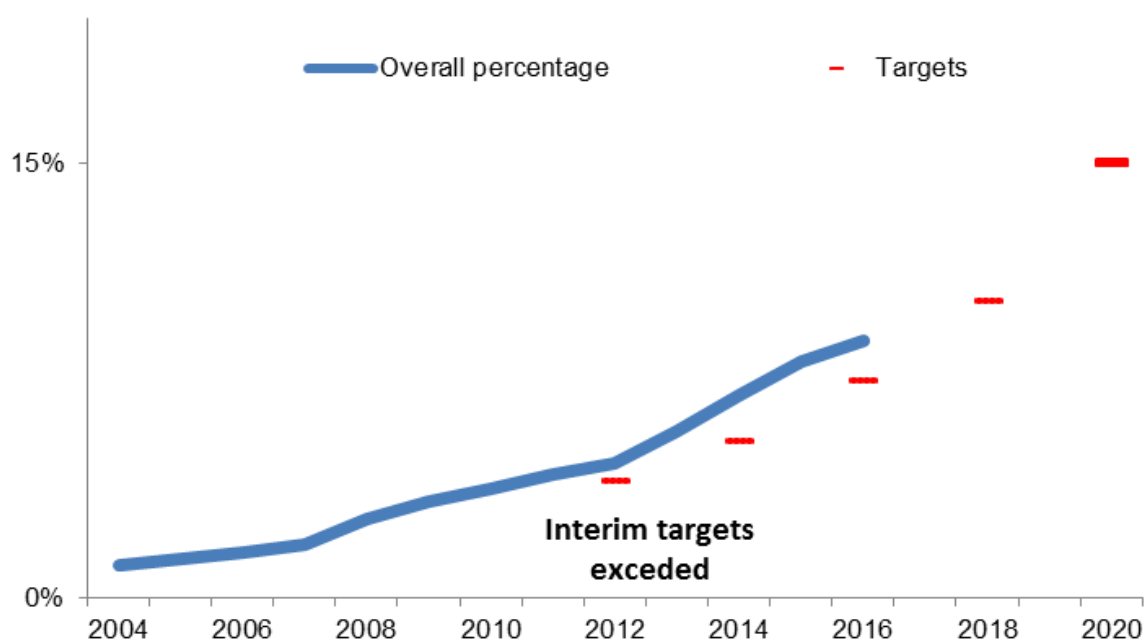
This article includes a first estimate of the UK's progress against the Renewable Energy Directive (RED) for 2016. It incorporates an update of the proportion of renewable electricity generation for 2016 previously published in the March 2017 issue of Energy Trends, and a first estimate of renewable heat generation. The first three sections describe trends in actual generation for electricity, heat, and renewable transport fuels in 2016. The subsequent sections relate to the methodology used to calculate progress against the Directive and UK progress for 2016. It also includes a brief comparison of member states' progress for 2015, the latest year for which data have been published.

Key messages

Progress against the Renewable Energy Directive (2009);

- In 2016, renewable energy provisionally accounted for 8.9 per cent of final energy consumption, as measured using the 2009 Renewable Energy Directive (RED) methodology, an increase of 0.7 percentage points on 2015.
- The UK has now exceeded its third interim target; averaged over 2015 and 2016, at 8.5 per cent against its target of 7.5 per cent. Chart 1 shows current progress and all targets;

Chart 1: Progress against Renewable Energy Directive and UK targets



- Renewable electricity accounted for 24.6 per cent of total generation (as measured using the RED methodology), an increase of 2.3 percentage points compared to 2015.
- Renewable heat accounted for 6.2 per cent of total heat consumption, an increase of 0.7 percentage points on 2015.
- Renewable energy for transport accounted for 4.5 per cent of total transport energy, 0.1 percentage points higher than in 2015.

Trends in Generation;

- Total renewable energy increased by 706 ktoe (4.3 per cent), from 16,591 in 2015 to 17,296 ktoe in 2016.
- Renewable electricity generation fell by 0.2 TWh (0.2 per cent) to 83.2 TWh in 2016
- Electricity generation from solar photovoltaics increased by 2.9 TWh (38 per cent) to 10.4 TWh, a record.
- Total wind generation fell by 7.3 per cent to 37.4 TWh in 2016 as a result of lower wind speeds.
- 15 per cent of renewable heat generation in 2016 was supported by the Renewable Heat Incentive (RHI).

Renewable electricity generation

In 2016, renewable electricity generation represented 71 per cent of total renewable energy (on a fuel input basis; see table 5 at the end of this article). **Total renewable generation** fell by 0.2 TWh (0.2 per cent) to 83.2 TWh in 2016. **Total wind generation** fell by 7.3 per cent to 37.4 TWh; an increase in capacity (mostly for onshore wind) was more than offset by lower wind speeds compared to 2015, though wind speeds for that year had been the highest for the preceding 15 years. Onshore wind fell by 8.4 per cent to 21.0 TWh and offshore wind fell by 5.8 per cent. **Generation from hydro** also fell, by 14 per cent to 5.4 TWh in 2016, although 2015 had been a record year due to high rainfall (in the main hydro catchment areas)¹. **Solar photovoltaic generation** showed the largest absolute increase of the renewable technologies (2.9 TWh or 38 per cent) due to additional capacity which increased by 25 per cent. For the second year, solar photovoltaics are the leading technology by capacity though is the fourth largest in generation terms. The largest increase in generation in percentage terms was **anaerobic digestion** which showed growth of 40 per cent to 2.1 TWh in 2016, a record, the result of increased capacity supported by the Feed in Tariff. Table 1 below shows electricity generation over the last three years by technology;

Table 1

Generation (TWh)	2014	2015	2016	Percentage share in 2016
Onshore Wind	18.6	22.9	21.0	25.2%
Offshore Wind	13.4	17.4	16.4	19.7%
Shoreline wave/Tidal	0.0	0.0	0.0	0.0%
Solar photovoltaics	4.1	7.5	10.4	12.5%
Hydro Small scale	0.8	1.0	1.0	1.2%
Hydro Large scale	5.1	5.3	4.4	5.3%
Landfill gas	5.0	4.9	4.7	5.7%
Sewage sludge digestion	0.8	0.9	1.0	1.1%
Municipal solid waste combustion	1.9	2.6	2.7	3.3%
Co-firing with fossil fuels	0.1	0.2	0.1	0.1%
Animal Biomass	0.6	0.6	0.7	0.8%
Anaerobic Digestion	1.0	1.5	2.1	2.5%
Plant Biomass	13.1	18.6	18.8	22.6%
Total generation	64.5	83.4	83.2	100.0%

Onshore wind continued to be the leading individual technology for the generation of electricity from renewable sources during 2016, although its share of renewables generation continued to fall, from 28 per cent in 2015 to 25 per cent in 2016. Offshore wind's share of

¹ Weather data are available as part of this publication;
www.gov.uk/government/statistics/energy-trends-section-7-weather

renewables generation also fell slightly in 2016 to 20 per cent (from 21 per cent in 2015). The remaining technologies' shares were similar to 2015.

Heat production

Renewable heat generation accounted for 23 per cent of total renewable sources in 2015 (see table 5 at the end of this article), up slightly (one and a half percentage points) on 2015. The four categories of renewable heat production in the United Kingdom are the direct combustion of various forms of bioenergy, (94 per cent of the total), active solar heating, geothermal, and heat pumps. Table 2 below shows the source mix.

Table 2

Heat generation (ktoe)	2014	2015	2016	Percentage share in 2016
Landfill gas	13.6	13.6	13.6	0.3%
Sewage sludge digestion	67.7	73.1	72.1	1.8%
Wood combustion - domestic	1,698.1	1,908.5	1,954.0	49.6%
Wood combustion - industrial	319.1	318.7	319.1	8.1%
Animal Biomass	34.5	30.7	23.0	0.6%
Anaerobic digestion	42.9	95.5	179.4	4.5%
Plant Biomass	561.2	837.7	1,102.2	28.0%
Biodegradable energy from waste	22.4	45.6	45.7	1.2%
Active solar heating	49.6	50.7	51.2	1.3%
Deep geothermal	0.8	0.8	0.8	0.0%
Heat Pumps	106.7	155.8	182.2	4.6%
Total	2,916.6	3,530.6	3,943.3	100.0%

Renewables used to generate heat have grown in recent years, following a decline up to 2005 as a result of tighter emission controls which discouraged on-site burning of biomass, especially wood waste. Policies such as the Renewable Heat Incentive (RHI) and Renewable Heat Premium Payment (RHPP) schemes are designed to support renewable heat production. Around 15 per cent of renewable heat during 2016 was supported through the receipt of RHI payments (589 ktoe, or 6,852 GWh). Domestic use of wood is the main contributor to renewables used for heat – comprising around 50 per cent of the renewable heat total. Plant biomass represented 28 per cent of renewable heat and industrial wood 8.1 per cent. Heat pumps (mainly in the domestic sector) contributed 4.6 per cent of the renewable heat total.

Liquid biofuels for transport

Liquid biofuels for transport comprised around 5.8 per cent of total renewable sources. Two road transport fuels, biodiesel and bioethanol, are sold blended with diesel and petrol.

In 2016, 708 million litres (582 ktoe) of biodiesel and 759 million litres (428 ktoe) of bioethanol were consumed in 2016; by volume, biodiesel consumption was 5.8 per cent higher than in 2015, whilst bioethanol consumption was 4.5 per cent lower. During 2016, biodiesel accounted for 2.4 per cent of diesel, and bioethanol 4.4 per cent of motor spirit; the combined contribution of biodiesel and bioethanol was 3.1 per cent by volume, 0.1 percentage points lower than in 2015. The Renewable Energy Directive introduced various sustainability criteria for transport biofuels; certain biofuels derived from waste products (for example, waste cooking oil) have extra weighting when monitoring progress against the transport component, but not the overall target, of the Directive.

Progress against the Renewable Energy Directive

Table 3 shows the increasing share of renewable energy from electricity, heat and transport;

Table 3: Progress against the 2009 Renewable Energy Directive

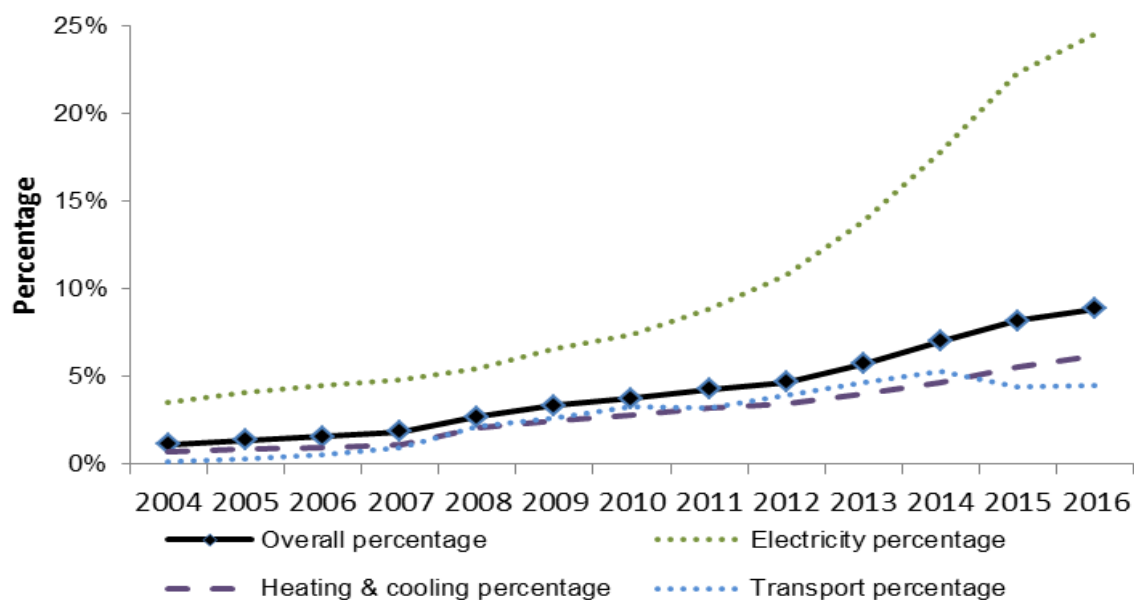
	2004	2010	2014	2015	2016
Percentage of electricity from renewable sources (normalised)	3.5%	7.4%	17.8%	22.3%	24.6%
Percentage of heating and cooling from renewable sources	0.7%	2.8%	4.7%	5.5%	6.2%
Percentage of transport energy from renewable sources	0.2%	3.3%	5.3%	4.4%	4.5%
Overall renewable consumption ^{1,2}	1.1%	3.8%	7.0%	8.2%	8.9%

¹ Measured as a percentage of capped gross final energy consumption using net calorific values

² Cannot be directly calculated from the three separate measures

The proportion of renewable electricity is, calculated on a RED basis, 24.6 per cent for 2016, 2.3 percentage points higher than in 2015 and 0.3 percentage points higher than the initial estimate published in the March 2017 edition of Energy Trends. Although actual generation fell in 2016, the normalising effect of the RED methodology (see below) has resulted in an actual increase. Renewable heat also increased though to a lesser extent; from 5.5 per cent in 2015 to 6.2 per cent in 2016. The share of renewable energy in transport increased slightly, by 0.1 percentage point to 4.5 per cent. Chart 2 below shows

Chart 2: Progress against Renewable Energy Directive



Renewable Energy Directive Methodology

Progress against the RED is measured using a defined methodology; full details are published by Eurostat and can be found in the “SHARES manual”;

<http://ec.europa.eu/eurostat/web/energy/data/shares>

However, some of the key adjustments are outlined below;

Electricity Generation;

Generation uses a normalisation approach for wind and hydro generation to negate the effects of variable wind speeds and rainfall from one year to the next. Normalised wind generation is calculated using the average load factor for the most recent five years and applying to the average of the start and end of year capacity. For Hydro, the load factor is the average of the past 15 years, applied to capacity at the end of the current year.

Heat Generation;

Net calorific values are used in the heat energy calculation in contrast to The Digest of UK Energy Statistics (DUKES) which uses Gross Calorific Values. Additionally, heat energy generated by heat pumps includes only those heat pumps meeting the minimum Seasonal Performance Factor (SPF) of 2.5.

Renewable Energy for Transport

Some liquid biofuels, mostly those derived from waste products, are awarded double credits under the Renewable Transport Fuel Obligation scheme². This applies to the transport specific target of 10 per cent and not in the overall progress calculation.

Overall calculation adjustment

Final total energy consumption (i.e. the denominator) includes a cap on air transport fuel (6.18 per cent).

Renewable electricity’ share of generation (different measures)

In addition to the RED methodology for calculating renewable electricity’s share of total generation, using normalisation; it is also calculated on an International Basis (actual generation as a percentage of total generation), and on a Renewables Obligation (RO) basis (generation supported by the Renewables Obligation as a percentage of electricity sales).

In 2016, the lowest measure was on the International Basis at 24.5 per cent. On the RED basis, generation was higher at 24.6 per cent reflecting the normalisation of wind and hydro generation. The highest measure was the RO measure at 26.2 per cent. Table 4 below shows a comparison of the three different measures;

Table 4

	2004	2010	2014	2015	2016
International Basis ¹	3.6%	6.9%	19.1%	24.6%	24.5%
Renewable Obligation ²	3.1%	7.2%	19.8%	26.1%	26.2%
2009 Renewable Energy Directive ³	3.5%	7.4%	17.8%	22.3%	24.6%

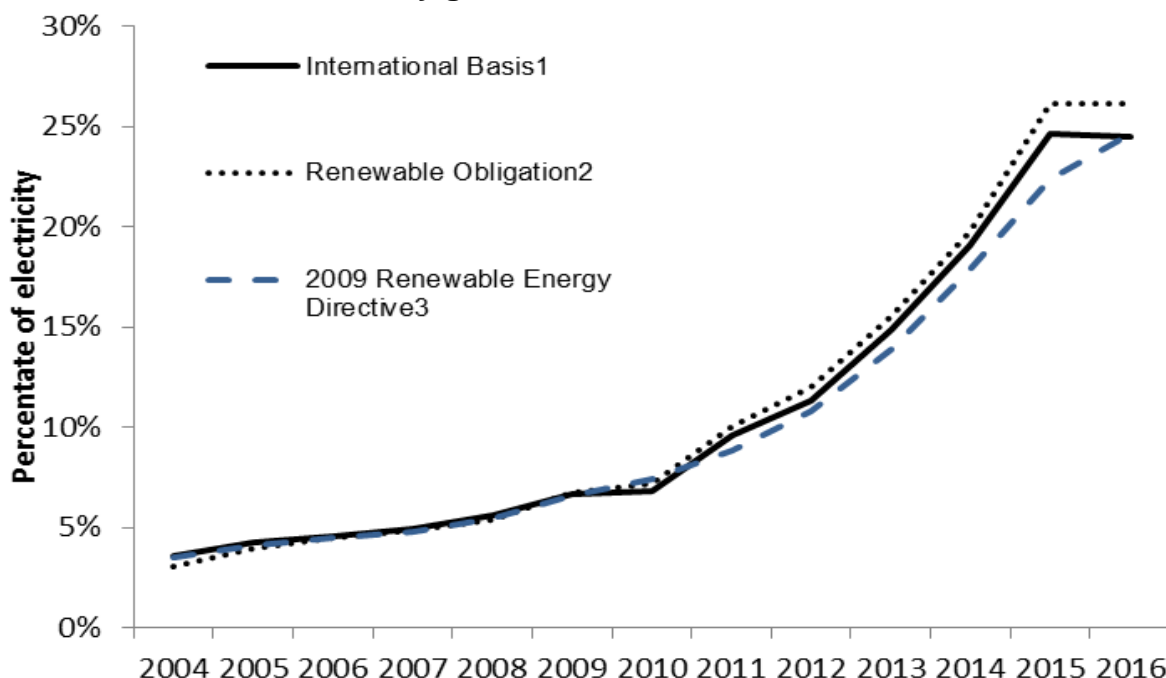
¹ All renewable electricity as a percentage of total UK electricity generation

² Measured as a percentage of UK electricity sales

³ 2009 Renewable Energy Directive measured as a percentage of gross electricity consumption

Load factors in 2016 (see table ET 6.1) for wind and hydro generation were low compared to the previous year and to the long term mean due to low wind speeds, and low rainfall in the main catchment areas (see tables ET 7.2 and ET 7.4 respectively for weather data). This fall in generation due to these weather effects were damped by the normalisation process and in such years, the proportion calculated on a RED basis will tend to diverge from the alternate measures. Chart 3 shows this divergence;

² www.gov.uk/guidance/renewable-transport-fuels-obligation

Chart 3: Growth in electricity generation from renewable sources since 2004

Member state comparison of progress against the Directive

The UK has now exceeded its third interim target; averaged over 2015 and 2016, at 8.5 per cent against its target of 7.5 per cent. The Third Progress Report, based on 2013 and 2014, was published in January 2016³ and the fourth, including progress against the third interim target, is due to be published by Eurostat early in 2018.

Eurostat publishes data on how countries are progressing towards their RED (final and interim) targets. The latest comparative data relates to 2015⁴. The 2015 RED percentage for all EU countries combined was 16.7 per cent, a 0.6 percentage point increase on 2014, and requiring a 3.3 percentage increase to reach the 20 per cent target in 2020. Once again Norway, who report data to Eurostat despite not being a member of the EU, achieved the highest proportion of renewable energy at 69.4 per cent, the same as in 2014. Sweden had the second highest proportion of renewable energy at 53.9 per cent, a 0.2 percentage point increase on 2014. From 2014 to 2015, the UK increased its share by 0.6 percentage points, the tenth highest increase of member states.

In 2014, a third of the member states had exceeded their 2020 targets; Bulgaria, the Czech Republic, Estonia, Croatia, Italy, Lithuania, Romania, Finland and Sweden. In 2015, a further two countries had exceeded theirs; Denmark at 30.8 per cent (target 30 per cent), and Hungary at 14.5 per (target 13 per cent).

The finalised 2015 figures for all member states will be published by Eurostat in early 2018, alongside the fourth progress report.

The UK is now challenged to increase its share of renewable energy by a further 6.8 percentage points to meet its 2020 target of 15 per cent, the fourth highest increase required behind The Netherlands, France, and Ireland. Though taking into account 2016's result, this is now reduced to 6.1 percentage points. The UK's fourth interim target is 10.2 per cent averaged across 2017 and 2018 and an initial estimate will be published in June 2019.

³ <https://ec.europa.eu/energy/en/topics/renewable-energy/progress-reports>

⁴ <http://ec.europa.eu/eurostat/web/energy/data/shares>

Special feature – Renewable energy in 2016

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Table 5: Renewable sources used to generate electricity and heat, and for transport fuels ⁽¹⁾ ⁽²⁾

	Thousand tonnes of oil equivalent		
	2014	2015	2016
Used to generate electricity ⁽³⁾			
Wind:			
Onshore	1,595.4	1,968.6	1,802.4
Offshore	1,152.6	1,498.1	1,410.6
Shoreline wave / tidal ⁽⁴⁾	0.2	0.2	0.0
Solar photovoltaics	348.6	648.8	896.0
Hydro:			
Small scale	71.8	84.6	87.4
Large scale ⁽⁵⁾	434.5	456.9	376.5
Bioenergy:			
Landfill gas	1,650.8	1,598.0	1,542.4
Sewage sludge digestion	275.5	293.3	311.7
Biodegradable energy from waste	682.1	905.2	1,117.4
Co-firing with fossil fuels	25.1	37.8	24.6
Animal Biomass ⁽⁶⁾	224.8	235.3	230.1
Anaerobic digestion	335.4	482.4	673.1
Plant Biomass ⁽⁷⁾	2,912.9	3,847.6	3,871.0
Total bioenergy	6,106.6	7,399.6	7,770.4
Total	9,709.7	12,056.9	12,343.3
Non-biodegradable energy from waste ⁽⁸⁾	688.4	911.5	1,123.7
Used to generate heat			
Active solar heating	49.6	50.7	51.2
Bioenergy:			
Landfill gas	13.6	13.6	13.6
Sewage sludge digestion	67.7	73.1	72.1
Wood combustion - domestic	1,698.1	1,908.5	1,954.0
Wood combustion - industrial	319.1	318.7	319.1
Animal Biomass ⁽⁹⁾	34.5	30.7	23.0
Anaerobic digestion	42.9	95.5	179.4
Plant Biomass ⁽¹⁰⁾	561.2	837.7	1,102.2
Biodegradable energy from waste ⁽⁶⁾	22.4	45.6	45.7
Total bioenergy	2,759.6	3,323.3	3,709.1
Deep geothermal	0.8	0.8	0.8
Heat Pumps	106.7	155.8	182.2
Total	2,916.6	3,530.6	3,943.3
Non-biodegradable wastes ⁽⁸⁾	158.4	158.5	167.6
Renewable sources used as transport fuels			
as Bioethanol	458.8	449.1	427.8
as Biodiesel	783.8	554.1	581.7
Total	1,242.7	1,003.1	1,009.5
Total use of renewable sources and wastes			
Solar heating and photovoltaics	398.1	699.5	947.2
Onshore wind	1,595.4	1,968.6	1,802.4
Offshore wind	1,152.6	1,498.1	1,410.6
Shoreline wave / tidal	0.2	0.2	0.0
Hydro	506.3	541.6	463.9
Bioenergy	8,866.2	10,722.9	11,479.4
Deep geothermal	0.8	0.8	0.8
Heat Pumps	106.7	155.8	182.2
Transport biofuels	1,242.7	1,003.1	1,009.5
Total	13,869.0	16,590.6	17,296.1
Non-biodegradable energy from waste ⁽⁸⁾	846.8	1,070.0	1,291.3
All renewables and wastes	14,715.8	17,660.6	18,587.5

(1) Includes some waste of fossil fuel origin.

(2) See the Digest of UK Energy Statistics for technical notes and definitions of the categories.

(3) For wind, solar PV and hydro, the figures represent the energy content of the electricity's bioenergy the figures represent the energy content of the fuel used.

(4) Includes the EMEC test facility.

(5) Excluding pumped storage stations.

(6) Includes electricity from poultry litter combustion and meat & bone combustion.

(7) Includes electricity from straw and energy crops.

(8) Non-biodegradable part of municipal solid waste plus waste tyres, hospital waste, and glass.

(9) Includes heat from farm waste digestion, and meat and bone combustion.

(10) Includes heat from straw, energy crops, paper and packaging.

Enhancements to Energy Trends gas tables

Background

This article outlines the i.) effects of new data from industry in regards to indigenous production and imports, ii.) methodological changes to the UK's gas export volumes and iii.) the inclusion of biomethane injections into the grid from certified Renewable Heat Incentive (RHI) installations.

Changes to gross gas production and gas import volumes

Gross gas production and imports have been revised from 2008 onwards following new data submitted by industry. As a result, some gas previously categorised as arising from indigenous production on the UKCS has been reallocated to imports. The supply of gas into the UK remains steady but the split between indigenous production and imports has altered.

Impact of revisions

Over the last 9 years, around ~2.6 per cent of the gas that has been reported as domestic production from some terminals should have been reported as imported gas from Norway. There are some more significant annual spikes outlined in table 1 below.

Table 1: Changes in UKCS gross production (GWh)

	2008	2009	2010	2011	2012	2013	2014	2015	2016
Previous	809,649	693,965	664,353	526,030	452,094	424,153	427,784	460,268	476,744
Revised	807,821	679,344	642,515	511,532	434,941	410,460	415,515	451,437	462,307
Difference	-0.2%	-2.1%	-3.3%	-2.8%	-3.8%	-3.2%	-2.9%	-1.9%	-3.0%

Consequently, this has had a similar impact to imports, where imports from Norway had previously been underestimated by around ~2.5 per cent as outlined in table 2 below.

Table 2: Changes in imports (GWh)

	2008	2009	2010	2011	2012	2013	2014	2015	2016
Previous	407,188	457,447	592,554	588,475	549,518	535,105	476,837	492,382	521,586
Revised	409,049	471,843	614,479	603,924	566,669	548,223	488,937	501,563	534,740
Difference	+0.5%	+3.1%	+3.7%	+2.6%	+3.1%	+2.5%	+2.5%	+1.9%	+2.5%

The breakdown of imports can be found in table ET 4.3 and ET 4.4 and users will see revisions for imports from Norway for the reasons mentioned previously along with two new sources from Norway specifically outlined in table ET 4.4.

Changes to gas export volumes

Changes have been made to the methodology used by BEIS to calculate exports to the Republic of Ireland and the Isle of Man. These changes include removing Virtual Reverse Flows (VRF) from the gas sent to Ireland, use of a new data source for gas to Northern Ireland and gas to the Isle of Man, which have now been separately identified in the latest Energy Trends table ET 4.3. Further details are provided below.

Virtual Reverse Flows (VRF) at the Moffat Interconnector

Under European Commission regulations¹ it is required that gas transported between two regulated natural gas pipeline systems must be bi-directional. This could be gas travelling in both directions physically or there is the option for gas to physically travel in one direction and then a reverse flow service on a virtual basis offered in the opposite direction.

¹ Regulation (EC) 1775/2005 of the European Parliament and of the Council of 28 September 2005 on conditions for access to the natural gas transmission networks.

However, the Moffat Interconnector² is uni-directional in a physical sense with physical gas flows leaving the UK and entering the Republic of Ireland (with take-off points at the Isle of Man and Northern Ireland). Consequently, from March 2016 a virtual reverse flow service was offered at the Moffat interconnector where Irish shippers are able to avail a surplus on the network and sell the gas back within the UK. As a result there are no physical flows from the Republic of Ireland to the UK and virtual gas flows are subtracted from exports to Ireland, which is referred to as netting.

Since March 2016 these virtual reverse flows have been counted within the export figure to Ireland despite no physical flows occurring. We have since worked with National Grid and Gas Networks Ireland (GNI) to identify and remove these virtual flows to ensure only physical flows are reported in table ET 4.3. In future publications only physical exports will be included in line with the methodology mandated by the International Energy Agency (IEA) and the European Union (EU).

Exports to the Isle of Man

Along with the above changes, gas sent to the Isle of Man via a take off point on the Moffat interconnector is separated identified using data provided by Manx Utilities. Annex A illustrates the basics of the gas flows from the UK through to the Republic of Ireland, Northern Ireland and the Isle of Man.

Impact of revisions

Gas exports to the Republic of Ireland have decreased following the separation of gas to the Isle of Man from 2005 onwards. These increases are relatively small but are larger from March 2016 onwards following an amendment to the methodology to ensure that exports to the Republic of Ireland reported in table ET 4.3 are physical flows. An example of the structural change to table ET 4.3 can be found highlighted in Annex B.

Inclusion of biomethane injections into the grid from RHI installations

Previously the gas Energy Trends tables did not include biomethane injected into the grid in the upstream supply side of table ET 4.2, only gas that was available at terminals. Biomethane has been injected into the National Grid since 2014, though the volumes were small (0.02 per cent of supply in 2014, 0.2 per cent in 2016). As volumes are growing, BEIS will include these going forward.

The biomethane injections into the grid that will be reported are those certified under the Renewable Heat Incentive (RHI) into the gas supply for the UK. This data is obtained by the Renewable Heat team within BEIS, from Xoserve and then the team record match the data to a certified RHI installation. A single monthly number for biomethane injections is then provided to the oil and gas statistics team to include in the UK's gas supply.

Consequently, in the latest table ET 4.2 two new columns have been added to account for the additional gas supply, one for biomethane injections into the grid and another for total gas available³ in the UK. These structural changes are shown in Annex C.

The biomethane injections were already included in the downstream side of Table ET 4.2 within gas input into the transmission system. Gas Distribution Networks within Great Britain provide monthly data to BEIS for gas they input into the transmission system and through investigations it has been discovered that this data already contains biomethane injections into the grid. Therefore, the inclusion of the biomethane injections data rebalances gas supply and demand in table ET 4.2. This change has also impacted table ET 4.1 where the biomethane injections into the grid are included as transfers in the supply side.

² See page 103 of DUKES 2016 for a map of UK pipelines
www.gov.uk/government/uploads/system/uploads/attachment_data/file/540923/Chapter_4_web.pdf

³ Gas available at terminals plus biomethane injections into the grid.

Special feature – Enhancement to Energy Trends gas tables

Further developments

As ever, BEIS welcome comments on the methodology and suggestions for its improvement.

Acknowledgements

BEIS would like to acknowledge the assistance of the Oil and Gas Authority (OGA), Xoserve, National Grid, Gas Networks Ireland (GNI), Isle of Man Government and Manx Utilities.

Matthew Curds

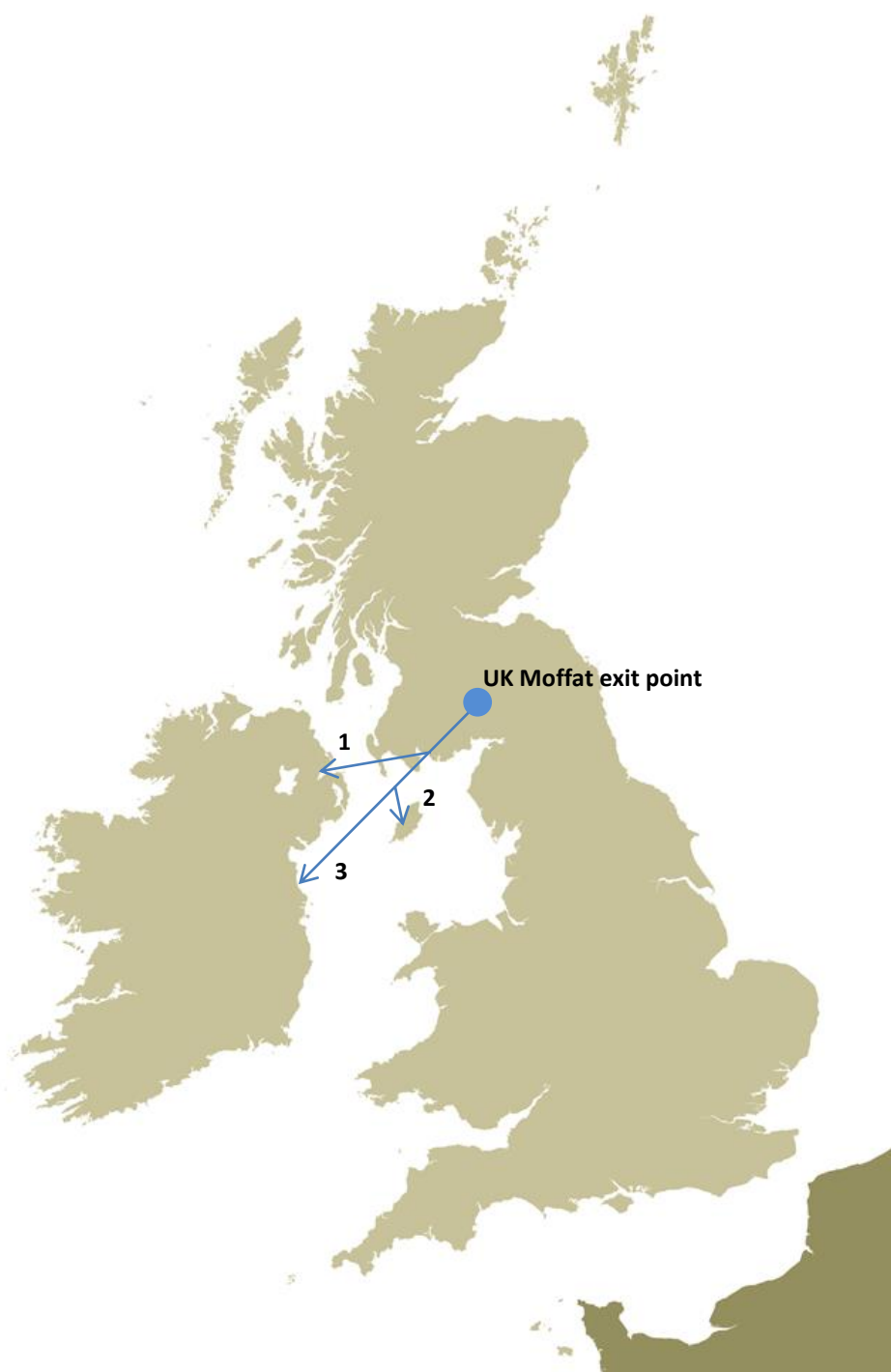
Upstream oil and gas

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Annex A: Gas flows from the UK to the Republic of Ireland with take-off points for Northern Ireland and the Isle of Man



Gas is sent from Great Britain via the Moffat exit point in Scotland through the Moffat interconnector to,

1. Northern Ireland via the Scottish Northern Ireland Pipeline (SNIP),
2. Then the Isle of Man via a take-off point on the Moffat interconnector,
3. And finally the Republic of Ireland via the Moffat interconnector.

Annex B: Energy Trends Table 4.3 under the new methodology

GAS

TABLE 4.3 Natural gas imports and exports

GWh

	Imports					Exports							Net Imports ¹⁰
	From Belgium ¹	From the Netherlands ²	From Norway ³	Liquefied Natural Gas ⁴	Total Imports	To Belgium ¹	To the Netherlands ⁵	To Norway ⁶	To the Republic of Ireland ⁷	To the Isle of Man ⁸	Liquefied Natural Gas ⁹	Total Exports	
2012	14,264	78,258	311,736	150,098	554,356	50,343	23,729	49	56,764	825	0	131,711	+422,645
2013	35,367	81,519	318,634	102,620	538,140	27,458	18,597	20	52,257	1,251	0	99,582	+438,558
2014	3,949	70,293	278,818	123,910	476,969	48,074	18,852	9	47,737	1,267	0	115,938	+361,030
2015	2,116	35,933	307,943	152,406	498,398	84,465	20,789	3	46,898	1,192	3,005	156,353	+342,045
2016 p	15,414	47,444	347,005	122,310	532,173	67,189	18,302	1	21,943	1,349	5,511	114,294	+417,879
<i>Per cent change</i>	(+)	+32.0	+12.7	-19.7	+6.8	-20.5	-12.0	-58.6	-53.2	+13.1	+83.4	-26.9	+22.2
2016 January - April	836	27,313	131,896	49,935	209,980	10,799	7,131	0	9,692	538	443	28,604	+181,376
2017 January - April p	12,576	9,352	154,991	32,373	209,292	15,946	5,715	0	6,564	495	2,486	31,205	+178,086
<i>Per cent change</i>	(+)	-65.8	+17.5	-35.2	-0.3	+47.7	-19.9	-	-32.3	-8.0	(+)	+9.1	-1.8
2016 February	228	6,729	31,328r	14,208r	52,492r	1,335	1,662	0	2,732r	134	-	5,863r	+46,629r
March	359	8,487	36,794r	12,686r	58,326r	1,961	1,765	0	2,285r	136	443	6,591r	+51,735r
April	-	4,919	29,788r	13,430r	48,138r	5,300	1,928	-	2,205r	126	-	9,559r	+38,578r
Total	587	20,135	97,910	40,324	158,955	8,596	5,356	0	7,222	396	443	22,013	+136,942
2017 February	5,355	3,590	40,662r	4,628r	54,235r	204	1,199	0	1,225r	130	1,014	3,772r	+50,464r
March	26	517	38,563r	9,983r	49,089r	3,201	1,393	0	1,456r	127	-	6,177r	+42,912r
April p	-	14	28,970	11,949	40,933	12,541	1,469	-	2,132	95	-	16,238	+24,695
Total	5,381	4,121	108,195	26,560	144,257	15,946	4,061	0	4,813	352	1,014	26,186	+118,071
<i>Per cent change¹¹</i>	(+)	-79.5	+10.5	-34.1	-9.2	+85.5	-24.2	-	-33.4	-11.3	(+)	+19.0	-13.8

- Physical flows of gas through the Bacton-Zeebrugge Interconnector.
- Physical flows via the BBL pipeline.
- Via the Langeled pipeline, Vesterled pipelines, the Tampen Link (from Statfjord to FLAGS), SAGE pipeline (from the Norwegian Alveheim and Edvard Greig gas fields that are linked to SAGE) and the CATS pipeline (from the Norwegian Rev and Gaupe gas fields that are linked to CATS)
- From various sources to Milford Haven (South Hook and Dragon), Isle of Grain and Gasport Teesside
- Direct exports from the Chiswick, Grove, Kew, Markham, Minke, Orca, Stamford, Windermere and Wingate offshore gas fields.
- Injection into the Norwegian Ula field.
- Gas to the Isle of Man is included in exports to the Republic of Ireland up until 2004 and then separately identified from 2005 onwards.
- Gas reported by the Isle of Man at the exit point of the Moffat Interconnector from 2005 onwards.
- Exports of LNG in 2016 broken down by destination are as follows: Argentina (913 GWh), Egypt (1,018 GWh), Puerto Rico (443 GWh) South Korea (1,124 GWh) and United Arab Emirates (2,014 GWh)
- A negative figure means the the UK was a net exporter of gas.
- Percentage change between the most recent quarter and the same quarter a year earlier; (+) represents a positive percentage change greater than 100%.

Annex C: Energy Trends Table 4.2 under the new methodology

GAS

TABLE 4.2 Natural gas production and supply

GWh

		Upstream gas industry							Downstream gas industry							
		Gross gas production ¹	Producers' own use ²	Less Exports ³	Plus Imports	Net imports ⁴	Gas available at terminals ⁵	Plus Biomethane injected into the grid ⁶	Total gas available ⁷	Gas input into transmission systems ⁸	Operators' own use ⁹	LNG Terminals' Own Use ¹⁰	Less Storage Own Use ¹¹	Stock changes ¹²	Metering differences ¹³	Gas output from transmission systems ¹⁴
2012		434,941	48,461	144,023	566,669	+422,646	809,127	-	809,127	809,460	1,682	2,218	595	-326	6,099	799,191
2013		410,460	46,000	109,664	548,223	+438,559	803,019	-	803,019	803,478	2,017	1,517	644	-1,265	5,697	794,869
2014		415,515	45,313	127,907	488,937	+361,030	731,153	136	731,289	732,137	1,500	1,831	651	+1,731	5,302	721,121
2015		451,437	51,024	159,517	501,563	+342,046	742,459	980	743,439	741,539	1,725	2,252	458	-3,973	7,281	733,796
2016 p		462,307	50,079	116,862	534,740	+417,878	830,106	1,919	832,025	830,966	2,369	1,808	140	-16,382	4,065	838,966
<i>Per cent change</i>		+2.4	-1.9	-26.7	+6.6	+22.2	+11.8	+95.9	+11.9	+12.1	+37.3	-19.7	-69.4	(+)	-44.2	+14.3
2016	January - April	156,811	18,235	29,909	211,284	181,376	319,952	504	320,456	320,346	750	738	72	-35,330	1,053	353,062
2017	January - April p	164,842	16,920	31,767	209,854	178,086	326,008	838	326,846	326,550	1,246	478	16	-17,661	980	341,492
<i>Per cent change</i>		+5.1	-7.2	+6.2	-0.7	-1.8	+1.9	+66.2	+2.0	+1.9	+66.2	-35.2	-78.3	-50.0	-7.0	-3.3
2016	February	37,154r	4,480	6,237r	52,866r	+46,629r	79,302r	116	79,418	79,591r	171r	210r	15	-11,518	334	90,379r
	March	39,195r	4,408	7,011r	58,746r	+51,735r	86,523r	132	86,654	86,301r	218	187r	16	-5,323	420	90,784r
	April	38,173r	4,261	9,746r	48,324r	+38,578r	72,490r	139	72,629	72,649r	141	198	26	-3,596r	338r	75,541
Total		114,522	13,149	22,994	159,936	136,942	238,315	386	238,701	238,542	530	596	58	-20,438	1,091	256,704
2017	February	37,837r	4,071	3,875r	54,339r	+50,464r	84,230r	192r	84,422r	84,291r	362	68r	5	-2,288r	131r	86,011r
	March	41,298r	4,161r	6,351r	49,263r	+42,912r	80,050r	220	80,270r	80,061r	271	148r	5	-1,441r	351	80,728r
	April p	40,629	4,101	16,352	41,047	+24,695	61,223	219	61,442	61,316	187	177	4	-4,465	344	65,069
Total		119,764	12,333	26,577	144,648	118,071	225,502	631	226,133	225,668	820	393	14	-8,194	826	231,808
<i>Per cent change¹⁵</i>		+4.6	-6.2	+15.6	-9.6	-13.8	-5.4	+63.5	-5.3	-5.4	+54.8	-34.1	-75.0	-59.9	-24.3	-9.7

1. Includes waste and producers own use, but excludes gas flared.
2. Gas used for drilling, production and pumping operations.
3. Includes exports direct from UKCS as well as others carried out by the downstream gas industry from the national transmission system.
4. A negative figure means the UK was a net exporter of gas.
5. Gas available at terminals for consumption in the UK as recorded by the terminal operators.
6. Biomethane injections into the grid from installations certified under the Renewable Heat Incentive (RHI).
7. Gas available at terminals and from biomethane injected into the grid.
8. Gas received as reported by the pipeline operators. This differs from gas available at terminals due to different methods for calculating the volumes of gas involved being used by the terminal and pipeline operators. Pipeline operators include Transco, who run the national pipeline network, and other pipelines that take North Sea gas supplies direct to consumers.
9. Gas consumed by pipeline operators in pumping operations etc.
10. Estimated at 1.5 per cent of gas from LNG terminals entering the National Transmission Systems.
11. Gas used in the Rough Storage Facility.
12. Stocks of gas held in specific storage sites, either as liquefied natural gas, pumped into salt cavities or stored by pumping the gas back into fields. A positive number shows stock being placed into storage which reduces the gas output from the the transmission systems.
13. The National Transmission System (NTS) consists of 276 discrete metering points with a degree of measuring uncertainty associated with each individual meter. The complexity of the system makes it difficult to ensure that all meters are accurate so that errors or bias in the flow calculations may occur. These errors/biases may occur for a number of reasons such as liquid contamination in the meter tube or on the plate itself, plate installation issues, dull plate edge, damage to plate edge, warped plate, grease on plate and incorrect parameters within the flow computer configuration.
14. Including public gas supply, direct supplies by North Sea producers, third party supplies and stock changes. These figures differ from those for total consumption in Table 1.2 which include producers and operators own use of gas excluded in this table.
15. Percentage change between the most recent quarter and the same quarter a year earlier; (+) represents a positive percentage change greater than 100%.

Changes to Eurostat tables methodology

Introduction

This article explains the rationale behind revisions made to the UK figures within the Eurostat tables from the Quarterly Energy Prices (QEP) publication. Eurostat collect data on the price of gas and electricity across member states. The data is collected by each member state and then submitted to Eurostat for publication.

Eurostat have recently amended the previous directive to a regulation and clarified their preferred treatment of taxes and levies and have issued new guidelines. Harmonised guidance on the methodology¹ for data collection are provided in an attempt to have comparable statistics across member states.

The UK has amended its data collection and is now collecting data on the value of any social and environmental policies affecting gas and electricity bills. This has been done to provide a more comparable base price to compare against other EU member states.

Summary of changes to survey

Eurostat requests that energy price data submitted is disaggregated into three elements: the base price of the energy, the cost of any social and environmental policies, and the cost of VAT, which combined make up the total price of the energy.

For domestic prices, the UK has previously combined the base price and the costs of social and environmental policies where these policy costs were not separately identifiable on a consumer's bill. This resulted in our prices showing a larger base price element and zero additional costs due to policies, whereas other member states were showing two distinct elements. For industrial prices, the same approach was taken. The cost of the Climate Change Levy is separately identified on bills so was included by BEIS as a tax and levy.

After reviewing the guidance and in discussion with Eurostat, we felt that the source of these charges is similar across the member states and therefore our statistics would be more comparable if the costs of these policies were disaggregated from the base price. As such, we have now started collecting data on the value of the energy sold that is a result of any social or environmental policy. Some policies affect only domestic or industrial whereas some affect the price of both. A full list of policies impacting bills can be found in Annex A.

Summary of revisions

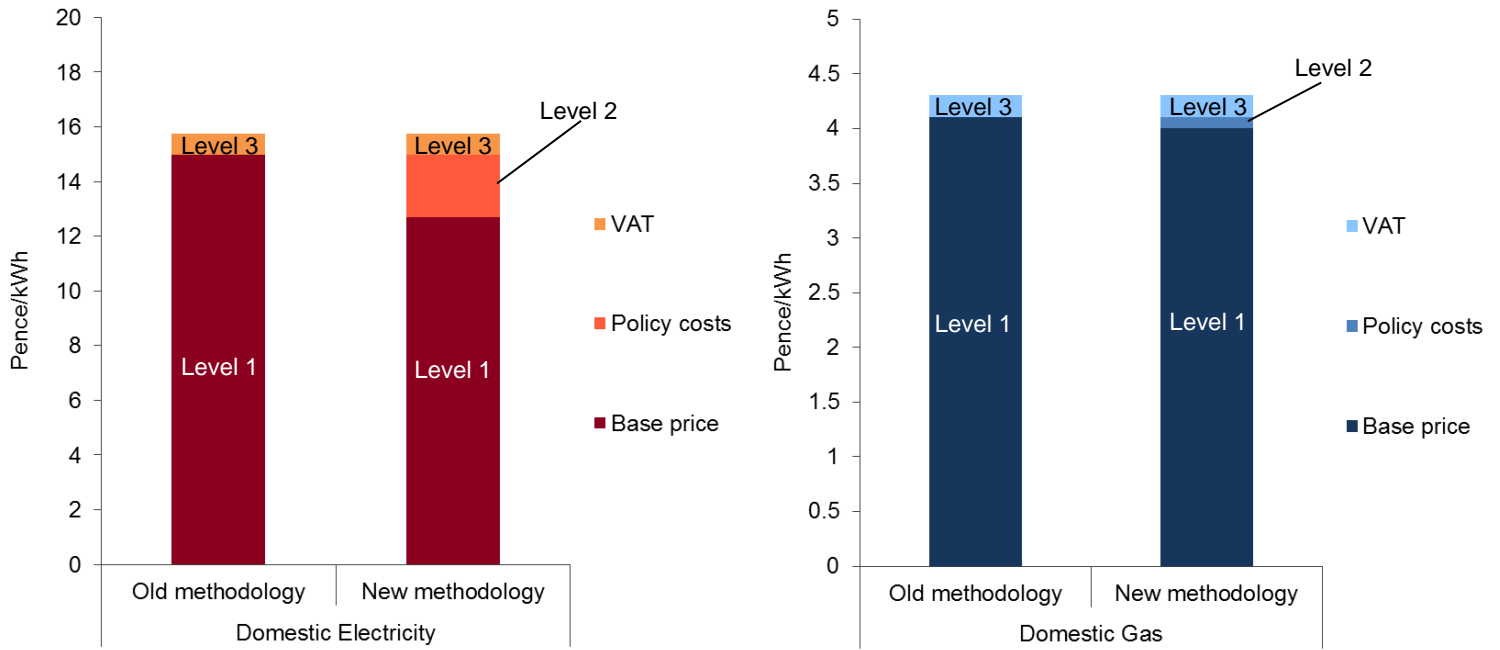
The charts below, based on prices in the period of July to December 2016, demonstrate how the new methodology acts to lower the base price and now shows the cost of the social and environmental policies. However, the total price remains unchanged. It can be seen that these policies largely affect electricity bills, and that the industrial gas price disaggregation is broadly unchanged as few policies outside of the Climate Change Levy apply to industrial gas prices.

The three elements of the prices are labelled as Level 1 – 3, whereby level 1 is the base price, level 2 is the base price plus levies and level 3 which is the base price plus levies and VAT. All three levels are submitted and are available on Eurostat's website². As part of QEP, for domestic prices, we publish level 1 and level 3 as level 2 can be derived easily by dividing level 3 by 1.05 to remove the VAT element.

¹ Eurostat regulation: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2016:311:FULL&from=EN>

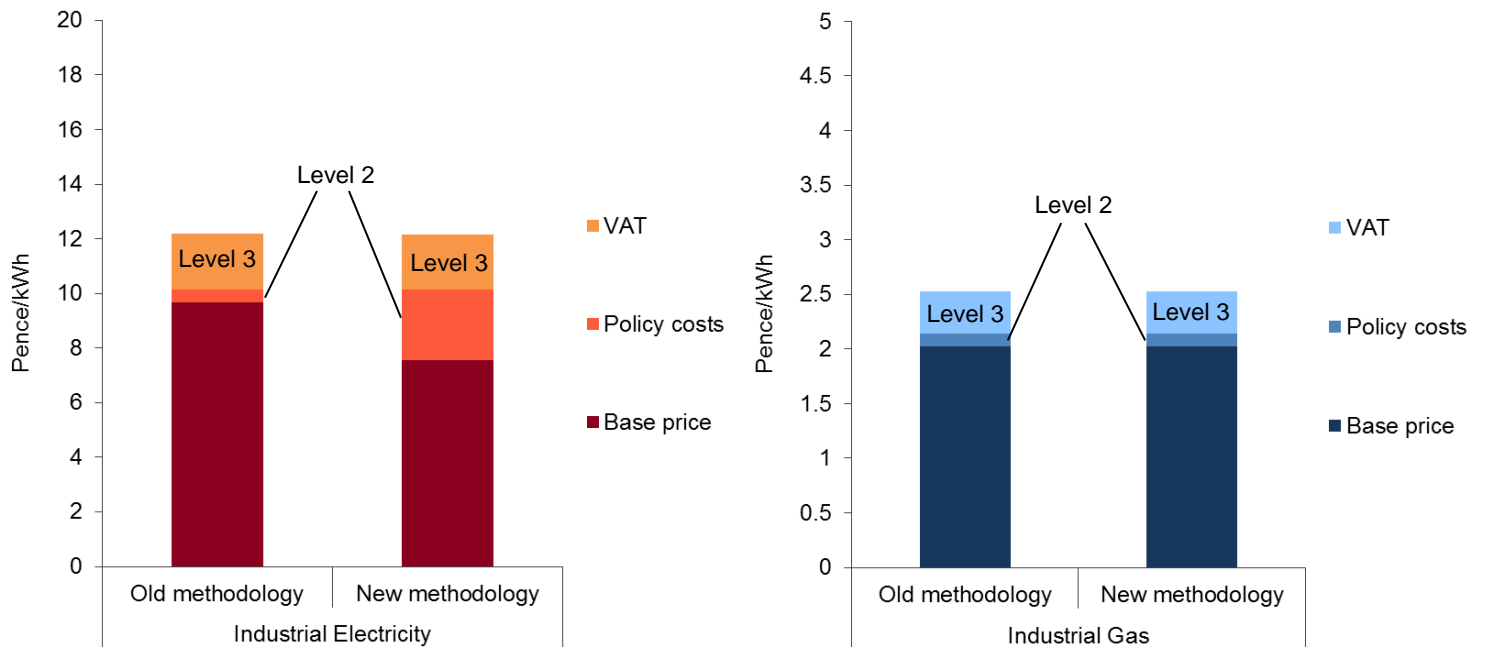
² Eurostat data: <http://ec.europa.eu/eurostat/web/energy/data/database>

Figure 1: Domestic prices, old vs. new methodology (Medium size band)



For Industrial users, we publish level 1 and level 2 as most firms will reclaim VAT as a recoverable cost. Also prices including VAT can be derived by adding 20 per cent to the level 2 price.

Figure 2: Industrial prices, old vs. new methodology (Medium size band)



Conclusion

The changes to the methodology have been made to provide more accurate comparisons to other member states in the EU. The proportion of the total value of domestic energy sold that is a result of Environmental and social policies is 14 per cent for electricity and 2 per cent for gas over semester 2 2016. Our data collection is still being developed to be as accurate as it can be, as some suppliers have had difficulty reporting against our requirements. In comparison to Ofgem's annual report³, our data collection has requested a breakdown of some policies not covered by Ofgem's requests. However, the figures are broadly in line, where expected, with those published by Ofgem which is based on suppliers' consolidated segmental statements⁴.

User feedback

Please send any comments or queries regarding this analysis to the contact details below:

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Annex A

Policy	Domestic Electricity	Industrial Electricity	Domestic Gas	Industrial Gas
Climate change levy		X		X
Energy company obligation (ECO) measures	X		X	
Renewable obligation support costs	X	X		
Feed in tariffs	X	X		
Warm home discount (WHD) scheme	X			
Smart meters and better billing	X		X	
Assistance for areas with high electricity distribution costs	X			
Renewable energy guarantees origin	X	X		
Contract for difference support costs	X	X		
Carbon price floor	X	X		
EU ETS	X	X		
Capacity market support costs	X	X		
Carbon reduction commitment		X		X

³ Ofgem bills, prices and profit: www.ofgem.gov.uk/publications-and-updates/infographic-bills-prices-and-profits

⁴ CSS reports: www.ofgem.gov.uk/publications-and-updates/energy-companies-consolidated-segmental-statements-css

Recent and forthcoming publications of interest to users of energy statistics

Smart Meters quarterly statistics

This quarterly publication provides estimates of the number of Smart Meters installed and operating in homes and businesses in Great Britain. The latest release, covering estimates of the number of Smart Meters deployed up to the end of March 2017, was published on 25 May 2017 at: www.gov.uk/government/collections/smart-meters-statistics

Household Energy Efficiency statistics

This series presents statistics on the Energy Company Obligation (ECO), Green Deal and homes insulated. The headline release presents monthly updates of ECO measures and quarterly updates of in-depth ECO statistics, carbon savings and the Green Deal schemes. The latest release was published on 22 June 2017 at:

www.gov.uk/government/collections/household-energy-efficiency-national-statistics

Annual Fuel Poverty statistics report and sub-regional data

This annual publication details the latest statistics on fuel poverty. The 2017 edition, detailing the 2015 statistics, was published on 29 June 2017, along with a series of detailed data tables, at: www.gov.uk/government/collections/fuel-poverty-statistics. Data for 2015 at sub-regional level is available at: www.gov.uk/government/collections/fuel-poverty-sub-regional-statistics

Local authority carbon dioxide emissions

This annual publication provides estimates of local authority carbon dioxide emissions in the United Kingdom. Data for 2015 was published on 29 June 2017 at:

www.gov.uk/government/collections/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics

Sub-national road transport consumption

This annual publication provides estimates of sub-national road transport fuel consumption in the United Kingdom, by vehicle and fuel type. Data for 2015 was published on 29 June 2017 at:

www.gov.uk/government/collections/road-transport-consumption-at-regional-and-local-level

Digest of United Kingdom Energy Statistics

This annual publication provides essential information for everyone involved in energy, from economists to environmentalists, and from energy suppliers to energy users. The 2017 edition will be published on 27 July 2017. With extensive tables, charts and commentary covering all the major aspects of energy, it provides a detailed and comprehensive picture of energy production and use over the last 5 years. It will be available (along with additional annexes and key series back to 1970) at: www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes

UK Energy in Brief

This annual publication summarises the latest statistics on energy production, consumption, prices and climate change in the United Kingdom. The figures are primarily taken from the Digest of United Kingdom Energy Statistics (see above). The 2017 edition will be published on 27 July 2017 at: www.gov.uk/government/collections/uk-energy-in-brief

Energy Flow Chart

This annual publication illustrates the flow of primary fuels from home production and imports to their eventual final uses. The flows are shown in their original state and after being converted into different kinds of energy by the secondary fuel producers, and are measured in million tonnes of oil equivalent, with the widths of the bands approximately proportional to the size of the flows they represent. The 2017 edition of the chart, showing the flows for 2016, will be published on 27 July 2017 at: www.gov.uk/government/collections/energy-flow-charts

Special feature – Recent and forthcoming publications

Energy Consumption in the United Kingdom

This annual publication brings together statistics from a variety of sources to produce a comprehensive review of energy consumption and changes in efficiency, intensity and output since the 1970s, with a particular focus on trends since 1990. The information is presented in five sections covering overall energy consumption and energy consumption in the transport, domestic, industrial and service sectors. The 2017 edition will be published on 27 July 2017 at:

www.gov.uk/government/collections/energy-consumption-in-the-uk

National Energy Efficiency Data-framework 2017

This publication presents analysis from the National Energy Efficiency Data-Framework (NEED). It provides updated domestic energy consumption results to include 2015 gas and electricity consumption data. It also includes updated estimates of the impact of installing energy efficiency measures on a household's gas consumption for measures installed in 2014. The latest edition will be published on 27 July 2017 at:

www.gov.uk/government/collections/national-energy-efficiency-data-need-framework.

Sub-national consumption of other fuels, 2015

This publication presents the findings of the residual fuels sub-national energy consumption analysis in the UK for the period covering 1 January to 31 December 2015. Other fuels are defined as non-gas, non-electricity and non-road transport fuels, and cover consumption of coal, petroleum, manufactured solid fuels and bioenergy and waste not used for electricity generation or road transport. The release will be published on 28 September 2017 at:

www.gov.uk/government/collections/sub-national-consumption-of-other-fuels

Sub-national total final energy consumption, 2015

This factsheet presents the findings of the sub-national energy consumption analysis in the UK for all fuels, for the period covering 1 January to 31 December 2015. The release will be published on 28 September 2017 at:

www.gov.uk/government/collections/total-final-energy-consumption-at-sub-national-level

Explanatory notes

General

More detailed notes on the methodology used to compile the figures and data sources are available on the BEIS section of the GOV.UK website.

Notes to tables

- Figures for the latest periods and the corresponding averages (or totals) are provisional and are liable to subsequent revision.
- The figures have not been adjusted for temperature or seasonal factors except where noted.
- Due to rounding the sum of the constituent items may not equal the totals.
- Percentage changes relate to the corresponding period a year ago. They are calculated from unrounded figures but are shown only as (+) or (-) when the percentage change is very large.
- Quarterly figures relate to calendar quarters.
- All figures relate to the United Kingdom unless otherwise indicated.

- Further information on Oil and Gas is available from The Oil & Gas Authority at: www.ogauthority.co.uk/

Abbreviations

ATF	Aviation turbine fuel
CCGT	Combined cycle gas turbine
DERV	Diesel engined road vehicle
LNG	Liquefied natural gas
MSF	Manufactured solid fuels
NGLs	Natural gas liquids
UKCS	United Kingdom continental shelf

Symbols used in the tables

- .. not available
- nil or not separately available
- p provisional
- r revised; where a column or row shows 'r' at the beginning, most, but not necessarily all, of the data have been revised.
- e estimated; totals of which the figures form a constituent part are therefore partly estimated

Conversion factors

1 tonne of crude oil =	7.55 barrels
1 tonne =	1,000 kilograms
1 gallon (UK) =	4.54609 litres
1 kilowatt (kW) =	1,000 watts
1 megawatt (MW) =	1,000 kilowatts
1 gigawatt (GW) =	1,000 megawatts
1 terawatt (TW) =	1,000 gigawatts

All conversion of fuels from original units to units of energy is carried out on the basis of the gross calorific value of the fuel. More detailed information on conversion factors and calorific values is given in Annex A of the Digest of United Kingdom Energy Statistics.

Conversion matrices

To convert from the units on the left hand side to the units across the top multiply by the values in the table.

To:	Thousand toe	Terajoules	GWh	Million therms
From	Multiply by			
Thousand toe	1	41.868	11.630	0.39683
Terajoules (TJ)	0.023885	1	0.27778	0.0094778
Gigawatt hours (GWh)	0.085985	3.6000	1	0.034121
Million therms	2.5200	105.51	29.307	1

To:	Tonnes of oil equivalent	Gigajoules	kWh	Therms
From	Multiply by			
Tonnes of oil equivalent	1	41.868	11,630	396.83
Gigajoules (GJ)	0.023885	1	277.78	9.4778
Kilowatt hours (kWh)	0.000085985	0.003600	1	0.034121
Therms	0.0025200	0.105510	29.307	1

Note that all factors are quoted to 5 significant figures

Sectoral breakdowns

The categories for final consumption by user are defined by the Standard Industrial Classification 2007, as follows:

Fuel producers	05-07, 09, 19, 24.46, 35
Final consumers	
Iron and steel	24 (excluding 24.4, 24.53 and 24.54)
Other industry	08, 10-18, 20-23, 24.4 (excluding 24.46), 24.53, 24.54, 25-33, 36-39, 41-43
Transport	49-51
Other final users	
Agriculture	01-03
Commercial	45-47, 52-53, 55-56, 58-66, 68-75, 77-82
Public administration	84-88
Other services	90-99
Domestic	Not covered by SIC 2007

